WORK

An Illustrated Magazine of Practice and Theory

FOR ALL WORKMEN, PROFESSIONAL AND AMATEUR.

[*All Rights reserved.*]

VOL. I.—NO. 5.] SATURDAY, APRIL 20, 1889. [PRICE ONE PENNY.

A DRAWING-ROOM OVERMANTEL

With Lincrusta Decoration.

BY E. BONNEY STEYNE.

No sooner is a pretty fancy in furnishing floated and fashionable, than imitations abound and weary one. If the Venus of Milo were in every house, we should welcome "You dirty boy," by way of variety. Governed by this idea, I wanted to design a drawing-room overmantel that was not exactly after the sort so widely advertised, now almost as conventional as the old gilt-framed looking-glass they replaced. Two ends were clearly desirable — economy of material, and newness in shape and effect. Whether I secured them in the overmantel now to be described my readers can decide for themselves. I can answer for the economy, and am content to let the novelty plead for itself. If there is one distinctive feature common to nine-tenths of these things, it is that they are angular in plan, in section, in elevation—all square right angles. A right angle is a good angle, and if we must be overdone with any variety, certainly it is about the best; but in a room of rectangular furniture, a bold curve tells with increased effect. But working on a curved plan is wonderfully hard to an amateur, and in spite of my wish to indulge in sweeping lines, I feared I must stick to the simpler plan. But a way out of the difficulty soon appeared. It was obvious to the meanest intelligence—in this case my own—that a curved plain edge to a piece of wood was not extremely difficult; it was when mouldings on the curve, or panels constructed on that plan, came to be thought of, that discretion suggested a more simple shape. But reckoning up available material I thought of lincrusta as possible, and then planning how to keep the curved notion, soon found a way out of the wood. First I decided upon two panelled ends, fashioned in ordinary manner: these were fixed to a bottom board 5 in. by 8 in., itself raised about 3 in. above the level of the marble shelf on which it was to stand. Among the available material were a quantity of turned spindles in deal, that M. C. Duffy and Co. had worked for me at a cost of ten or twelve shillings a gross, I forget which. These were about 4½ in. long. To avoid lodgment for dust, and economise my spindles, I cut them each in four pieces—that is, one across, and once in half, leaving half-round pieces 2½ in. long; these I put on to a thin piece of wood, with a bottom rail, and so filled up the space just above the shelf. But in my case this base was larger than the stone ledge, and so hid it completely from view, which was, to me, a decided advantage. (I may say, in passing, that a mantel border of close-falling imitation Spanish lace and curtains were afterwards added, and hid the unsightly mantelpiece entirely.)

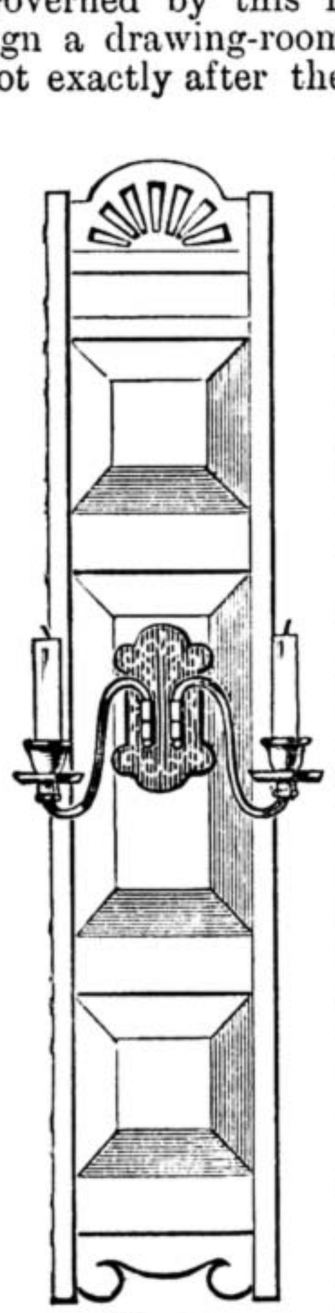


Fig. 3.

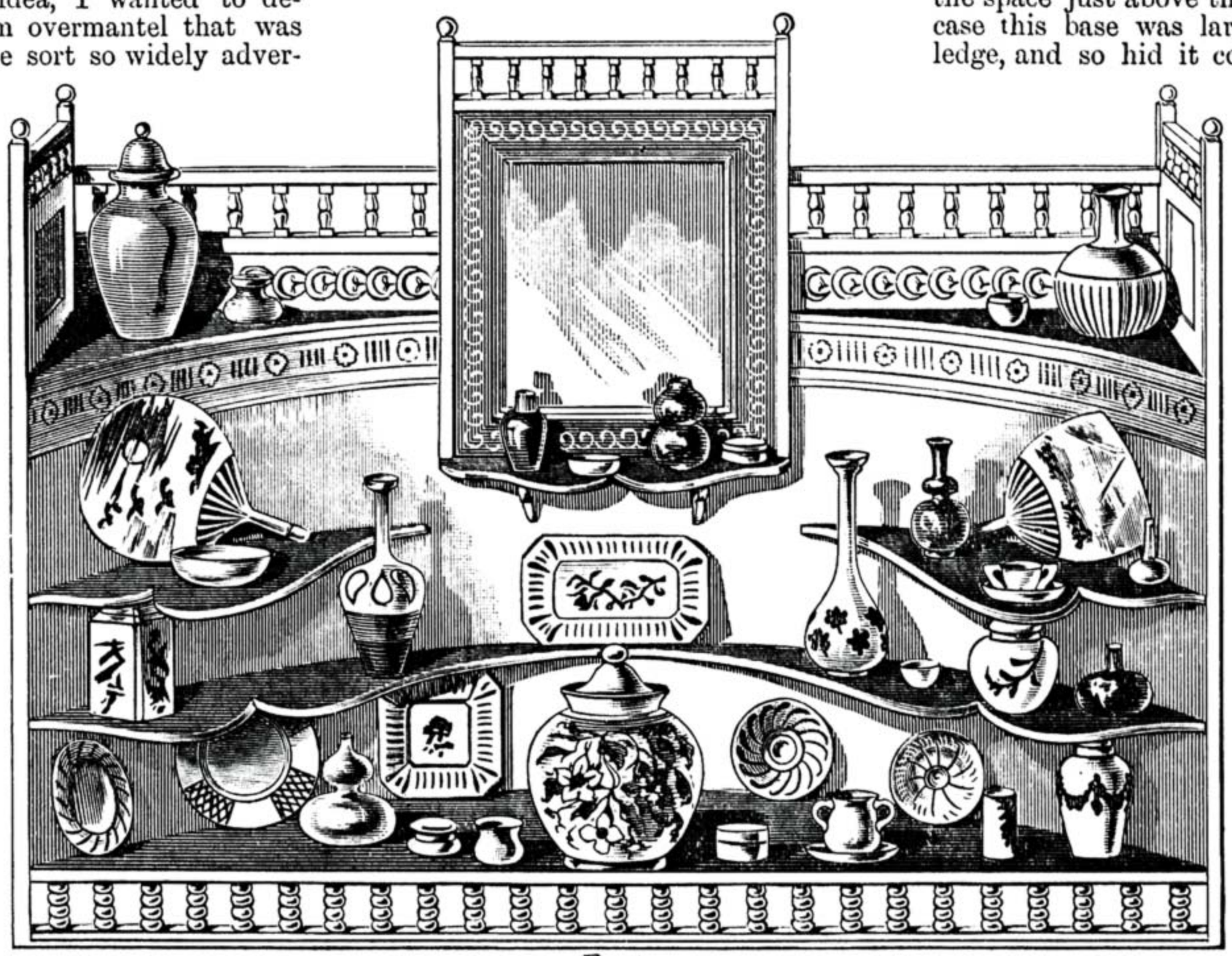


Fig. 1

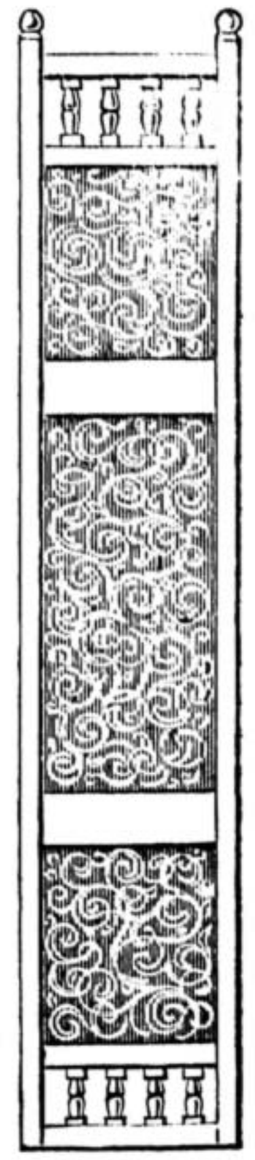


Fig. 4.

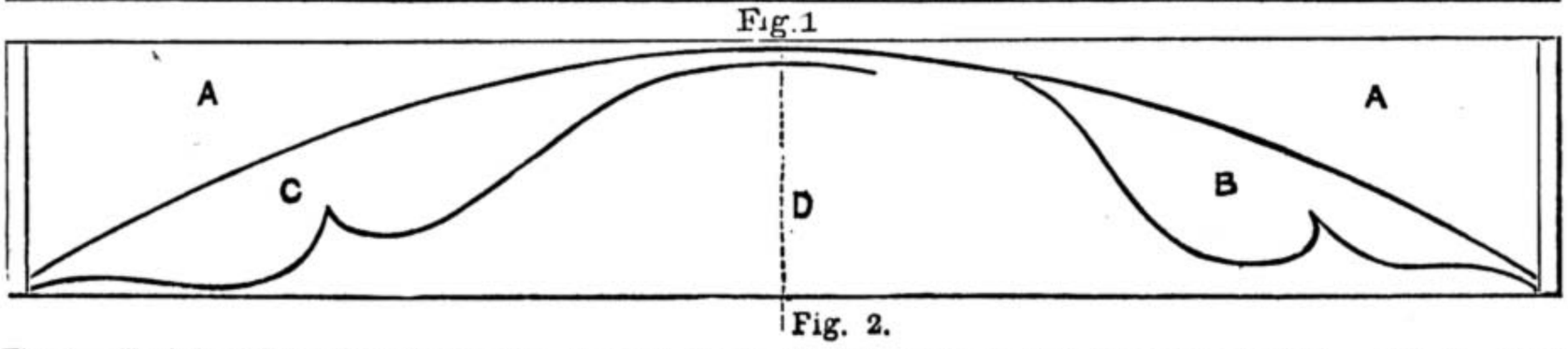


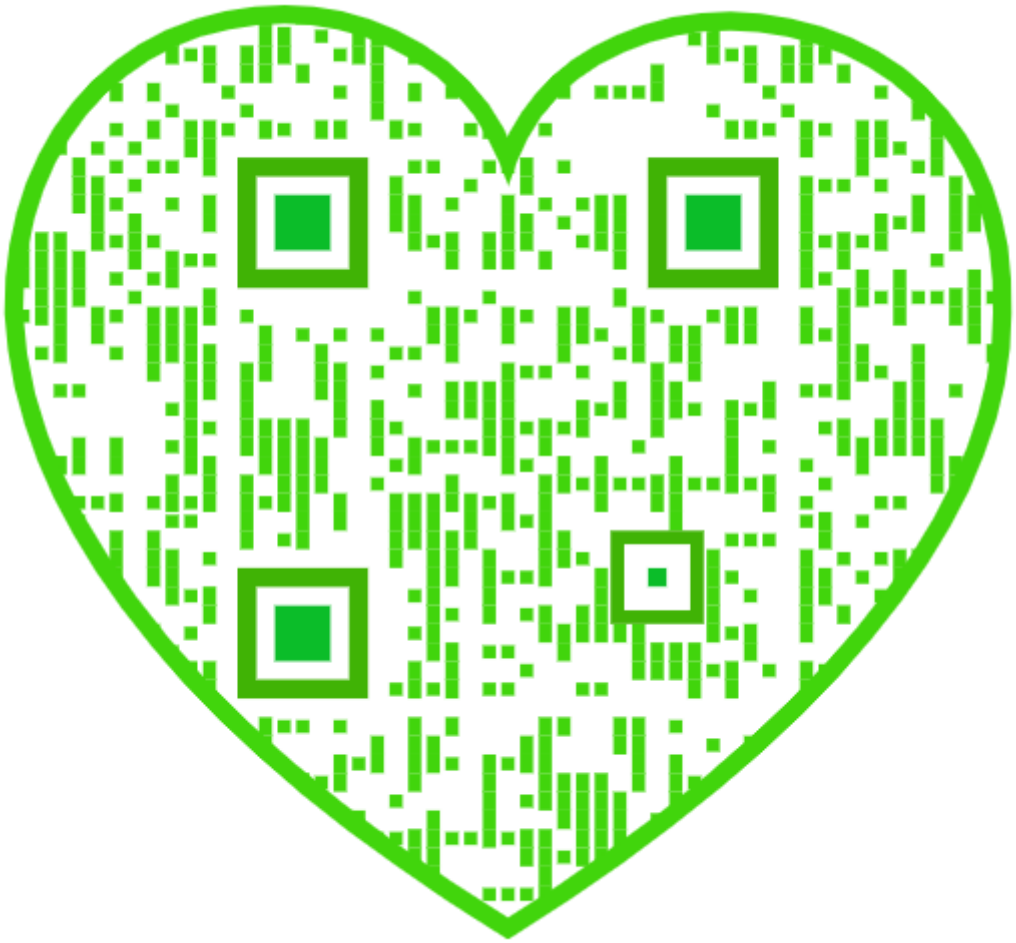
Fig. 2.

Fig. 1.—Sketch of Drawing-Room Overmantel, Painted: Lincrusta and Turned Ornaments. Fig. 2.—Plan showing Top Shelf (A), Second Shelf (B), Third Shelf (C), and Bottom (D). Figs. 3, 4.—Alternative Ends.

To this base I added a back, framed as shown in the sketch, but not solid, merely a rail here and there for the sake of stability.

Then taking the arc of a circle 4 ft. 7½ in. in its radius, I cut out three pieces of common ¾ in. deal to this plan; this left a bare eighth of an inch in the centre, just enough to keep it from breaking. Having fitted these shelves in place to the uprights at the ends—one at the base, one at a foot

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com



above, and one at two feet—I obtained a piece of tin the required length—I forget the exact size—about 6 ft. long and 2 ft. high. I then nailed the tin round the sweep, as shown in the drawing, being careful to join it very truly to the top curved shelf. Next I cut out shelves of half-inch pitch pine, free from knots—sequoia wood would have been better had it been at hand—as shown, and fixed them from the back, screwing them to the tin, and adding small brackets, which I fixed to supports placed behind. This sounds complex, but was really a very easy process, for the back of the mantel now growing into shape was as easy to work from as the front. Having framed a looking-glass, with a rail of the same spindles cut to about 2¼ in., and carried a similar rail across the top, the whole was roughly ready for decoration.

Whether I have given the actual order I adopted matters little, provided the result is clear. Now looking from the front the mantel was like the sketch annexed, but, of course, perfectly plain. Having unscrewed the shelves, I covered the whole tin curve and the panels of the ends with a low-relief all-over pattern in lincrusta, adding a border at the top edge, and using a similar border beneath the top railing and between the outer and inner moulding of the mirror. As the widths varied, I chose the patterns as nearly in character as I could that were of the right size for each place.

The woodwork being all smoothed, I painted the whole a creamy white, and, as it suited the room, left it so; but I fancy a solid gold treatment of the lincrusta, or the design worked in different shades of metallic bronze to emphasise the pattern, or a gold Japanese paper used in its place, would suit many rooms as well, or better.

The overmantel thus made is, perhaps, the most satisfactory one for its cost that I know. Having so many of the materials by me, I cannot give the exact price like a cookery book, but a few shillings ought to buy them all and produce a rival to one at a dealer's shop costing some pounds; while not entirely destitute of individual character, and, if I may say so, of artistic effect. Although its construction is not calculated to survive a railway journey, if packed in wrappers only, an overmantel is not a piece of furniture given to roaming over the house, like milking stools or music stands. Consequently, if capable of holding well together when fixed to the wall, it may be claimed to have fulfilled its object in life.

FRIENDLY HINTS TO AMATEUR WOOD WORKERS,

BY DAVID DENNING.

II.—LE PAGE'S LIQUID GLUE—ITS ADVANTAGES—TREATMENT—CANE GLUE BRUSH—DEFECTS IN WORK DONE BY AMATEURS—ACCURACY IN MARKING NECESSARY—TESTING—SUPERFLUITY OF TOOLS A HINDRANCE—PLANES—UTILITY OF SCRAPER—TREATMENT OF EDGES—FITTING JOINTS—HOW TO CUT MORTISES AND TENONS—DOWELS AND DOWELLING.

PERHAPS it may be expected that something should be said about the liquid glues, such as Le Page's, which have become so popular of late years both among amateurs and professionals. The advantages of these liquid glues are that they are always ready for use, requiring no heat, and they do not spoil by being kept if, be it said, the can is covered when not being used from. Even if exposed to the air the chief or only deterioration consists in the glue becoming thick, simply from the evaporation of moisture. The remedy, of course, if this happens, is to add a little more water, but in practice, with ordinary care, this is seldom requisite, and is not altogether desirable. In very cold weather a little warmth is necessary, but if kept in a warm room or placed near a fire for a time, it is soon fit for use. It does not require to be applied hot. For some kinds of work requiring a colourless or almost colourless glue it is unsurpassed, and as it does not set so quickly as the ordinary kind it is well adapted for marqueting and inlaid work generally. When it does set it possesses great tenacity if properly used, that is, thinly applied and well rubbed in. Without going the length of saying that it is better than animal glue, when this is of the best, and employed under the most favourable conditions, there can be no question that it is superior to ordinary common glue which has not been made, mixed, and used with skill and care. At first sight its cost may seem to render it rather an extravagant luxury, but as a little of it goes a long way, and it does not waste by keeping, practically it will be found to cost in the end little, if any, more than the usual kind. Mind, I do not say that where large quantities of this are used this would be so, for even if I cared to express a definite opinion it would not concern the amateur worker.

Before concluding these remarks about glue, it may just be suggested that as effective a brush as any may be made out of a piece of common cane. Whether from the ease with which it is made, its cheapness or its adaptability to its object, the cane brush is preferred by many competent and practical workers to any other. To form one, all that has to be done is to take a piece of cane, cut away the flinty skin for an inch or so at one end, and then hammer this till the fibres are softened and loosened, the only care required being not to cut them off while doing so. Such a brush will last a long time, in fact, as long as there is any stick left to hammer out a fresh end from.

Having done with glue for the present, it may be well just to consider how it is that beginners' work when glued or otherwise fastened up has such a lop-sided, out-of-the-straight look about it. Of course, a good deal must be put down to want of manipulative skill, but even after making due allowance for this there is no doubt that much is still left unaccounted for, and many defects which a little care would have prevented. How do they arise? Well—altogether apart from skill—there is undue haste in working. The practised workman may be able to do a thing quickly, but then if he be a rational being he puts accuracy before speed. Watch the skilled mechanic—see in what an apparently slap-dash manner he saws through a plank; but don't let the beginner try to do it in the same space of time, or the result will be disastrous. It cannot be done without practice. On the other hand, the most capable man would never think of sawing without some guide to cut to; yet, what he cannot manage, how often does one see the almost unpractised amateur, who probably does not saw as much in a twelvemonth as the other does in a week, attempt!

Let the hint therefore be taken to mark the work, and to do so as accurately as possible, whether it be plain cross-cutting, ripping, making dovetails, mortise and tenons, or anything else. Use the square and the gauge, and many a fault in work will be found *non est*. Never be afraid of *testing* the work as it proceeds, and don't pass on to the next part till that in hand is as nearly perfect as it can be got. I sometimes fancy if novices saw the frequency with which a skilled cabinet maker uses tests either by square, bevel, or winding sticks they would derive more substantial benefit than by laying in a whole roomful of the best tools, even though they included all the profusely advertised American novelties and so-called labour-saving inventions. Here again the amateur often makes a mistake. Good tools are an advantage, and so are plenty of them, but a superfluity is likely to be a hindrance rather than an aid. Let a man learn to use and understand a few tools thoroughly, rather than go in for everything he can lay his hands on. Some of our best workers use such a limited stock of tools that the well-to-do amateur would hardly say thank you for the whole chest full. I speak only of the general working tools rather than those out-of-the-way appliances which are seldom required, for, of course, there are some operations which can only be managed well with these. To use them and all the finer and more complicated tools, however, implies a power of handling the ordinary ones which can only be begotten of practice. The finest and most ingenious tools can only be appreciated or made use of to the full extent of their capabilities by those workers who are masters in their crafts. If there should be any doubt in some minds about the correctness of this, let me suggest, by way of example, a very finely set smoothing plane, and ask whether any man who could not manipulate an ordinary one would be able to work it as it might be worked. Could he by any possibility appreciate it and execute work worthy of it? It stands to reason he could not. Therefore, my amateur friends, especially novices, do not be discouraged if you cannot get the best of everything in the tool line, but make yourselves masters of those you have, and do not grudge a little extra time and trouble to do all that may be done with plain good tools. Speaking of using planes reminds me of another cause why amateur's work in cabinet making is so often rough-looking, not so much in the joints at angles, but in actual roughness or unevenness of surface. Much of this might be removed by the application of that somewhat, I fear, despised and neglected tool, the scraper. Its name is so significant that even those who have never seen or heard of it will have no difficulty in recognising its functions. By its aid all the little edges which are so apt to be left by the plane, and which show up so when the wood is polished, may be quickly removed, and the surface rendered so smooth that glass papering may not be required, though for cleaning up work this is invaluable. In using it, however, care should be taken not to round off the edges which are intended to be left square and sharp. To an educated eye—I mean technically so—nothing can look worse than a characterless-looking edge, whether on the square members of a moulding or other part. It is just by these little signs that the careful and skilful worker is distinguished from the sloven and the beginner.

Another matter on which caution may be counselled is that of fitting of joints. How often one sees these loose instead of firm and tight. Two pieces of wood dovetailed together, for example, fit almost as though

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

there were an incipient hinge at the angle. Glue is trusted to to stiffen up the joint, but after what has been said it will be seen that this is not desirable, and it would be far better to make the joint, whether dovetail or tenon, as tight as possible. All very well to say that, some readers may think, but how is it to be done? Well, of course, I know that to make even a plain dovetail or tenon joint requires skill and practice; nothing more so, for if one can make a thoroughly good dovetailed drawer, say, he can scarcely pose as a novice, but need have no hesitation in taking rank as a competent workman. Still, many failures may be avoided by a little forethought and extra expenditure of time. How do I mean? Well, simply this. Instead of cutting either mortise and tenon or dovetail joints even a shade too slack make them rather too tight to fit, and then very carefully cut away the surplus wood till the parts fit each other. In cutting away mortises and spaces for dovetail joints do so from both sides of the wood, sloping the chisel slightly inwards, and be careful to have the wood scribed on both sides with the gauge. With attention to these apparently insignificant details a good joint, or at any rate a passable one, is to be made even without much skill. As a substitute for the mortise and tenon joint the dowel is not to be despised. It is easy and, if properly made, so good and reliable that even the purists who insist on the former cannot find much to urge against it, while many prefer it. To go into all the *pros* and *cons* of tenons *v.* dowels would, however, be beside the question at present, but as there is so much to be said in favour of either it may fairly be considered that each possesses merits peculiar to itself. The requisites for good dowel joints are that the pins or dowels should be thoroughly dry, so that they will not shrink and become loose after they have been inserted, and that they must fit tightly and be long enough to fill the holes they are put in as nearly as possible. These are the principal points, and if they are attended to the joint will be strong enough for any practical purpose in ordinary circumstances.

Many other matters might have been touched on, and perhaps may be at some no distant date. In the meantime, enough has been said to show the amateur a few of the pitfalls which beset him in his endeavours, I will not say to surpass, but to equal, his professional *confrère*, and it is to be hoped that while profiting by these hints he will take them in the friendly spirit in which they are given.

A GOSSIP ABOUT HYDROQUINONE.

BY AN AMATEUR PHOTOGRAPHER.

HYDROQUINONE has long passed the primary experimental stage as a developer, but many and various are the opinions which have been expressed about it. Some advocates of it would apparently wish us to believe that it possesses almost magical qualities, that no matter how it is used, or whether on under-exposed or over-exposed plates, the resulting negative will be equally good. Others again charge it with various kinds of disagreeable qualities. It is said not to produce density, to be very slow and unreliable. As all experimenters may be assumed to pursue their investigations without prejudice for or against a new claimant for favour, the varying opinions given are apt to create astonishment. They are not to be accounted for except by the supposition that the various ingredients which compose the formulæ of which hydro is the developer are the cause of such widely divergent results. It is perhaps a fortunate thing that so many experiments are made; but certainly the number of formulæ which have been given for hydro developers is apt to discourage those who have neither time nor desire to investigate. The most cursory glance over any half dozen of the formulæ will be enough to convince any one that they cannot possibly all be the best or give equal results.

Many of the hydro developers seem unnecessarily complicated. The one I use was first published, I believe, by H. C. Taylor, in the "Amateur Photographer," although I have made some slight modifications, as any one will see by comparing the following formula with that alluded to. The ingredients and proportions are, however, in the main the same:—

¼ oz. Hydroquinone, dissolved in 3 oz. water.
½ oz. Sulphite of Soda, dissolved in 3 oz. water.
½ oz. 5% Solution of Sulphurous Acid.

The hydroquinone dissolves only slowly in water, but the quantity named will be readily taken up by 1 oz. of alcohol, which may be substituted for 1 oz. of the water. However, with moderate heat, the water alone will dissolve the hydro, so that there is no actual necessity for the use of spirit. The sulphite will also dissolve more freely in warm water. When this has become cool, add the acid. The two solutions are then mixed in one bottle.

For the remaining portion of the developer ½ oz. sulphite of soda and ¾ oz. carbonate of potash are dissolved separately in three ounces of water, and then mixed. We have thus two stock solutions, which seem as though they would keep indefinitely. At least, I have some which were prepared months ago, and they remain as good as when they were prepared.

To use these for ordinary exposures 1 dr. of each is mixed with 1 oz. of water.

The development is slower than with a quick pyro developer; but speed may be increased by using the developer warm. This may easily be managed by standing the bottles of stock solutions in hot water for a few minutes, and using tepid water instead of cold to dilute them. If the water is too hot it will dissolve the gelatine on the film, so care is necessary. An ordinary Ilford plate, which is the brand I generally use, begins to show high lights in about a couple of minutes, and though the first appearance of the image is slow, the action of the developer afterwards seems to increase in rapidity, so that in from five to eight minutes the negative is ready for removal.

Plates so developed are beautifully clear, without any trace of chemical fog. In colour they are a bluish grey, which allows of very rapid printing, and owing to this freedom from any yellow stain, the density should be pushed in, developing to a greater extent than is necessary with pyro, though I am not altogether sure whether I should not say "apparent" density. Owing to this freedom from stain the hydro developer is admirably adapted for transparencies, lantern slides, and bromide prints.

One great recommendation that hydro has is the immense latitude which can be allowed in exposure for plates to be developed with it. Some writers have found it equally useful for under and over exposures. My own experience is that it is not so good for under-exposed plates as for over-exposures. At the same time, I have developed several instantaneous photos very successfully, but, as a rule, it may be said, I fancy, that under-exposed plates are not a success with hydro. However, even if this be granted, which it would not be probably by enthusiastic admirers of the hydro developer, there is still much to be said in its favour: for instead of being in doubt about time of exposure, all we have to do is to let this be full. A plate that would be altogether a failure under pyro, from over exposure, may be saved by hydro development. It may be a slow printing one, but detail will be there. While speaking of this I should say that I am referring specially to its action on Ilford plates, for not long ago I had a few of another brand—name forgotten—which, treated in the same developer as the former, came out a most gorgeous golden colour, looking very much as though they had been intensified with uranium. Possibly other brands may show similar or analogous vagaries.

If a plate is known to be very greatly over exposed, it is well to develop it with a developer that has already been used instead of with fresh. As the developer, even after it has been mixed and used, remains good for some time, a separate bottle may be kept for old developer. After a time it darkens, but not sufficiently so for some days to render it useless.

The cost of new chemicals is sometimes against their general adoption, not to speak of the difficulty of getting them. These objections might have been urged a year or two ago against hydroquinone, but they are no longer applicable. It is, I believe, kept by most dealers in photographic materials, but in case any difficulty should be experienced in getting it locally by any one, I may say that I buy mine from Atkinson and Son, Manchester Street, Liverpool, for 1s. 9d. per ounce bottle. This price, compared with pyro at 1s. per ounce, may appear high, but I question whether there is much difference in use, it being possible to develop so many more plates in the same lot of developer without staining them. I have developed half a dozen, one after the other, without, so far as colour was concerned, being able to distinguish between first and last. This could hardly be said if they had been developed with pyro.

The cleanliness of hydro is one of the greatest points in its favour. It does not stain the nails or fingers, and this good quality, apart from any others it may have, will assure it a welcome in many a photographer's laboratory. Ammonia should not be used with hydro as an accelerator. The use of bromide is also unnecessary.

Enough, I think, has been said to show that hydroquinone is worthy of serious consideration by all who desire to get fair results easily.

HOME-MADE TOOLS.

BY J. H.

II.—IRON SMOOTHING PLANE—CHARIOT PLANE.

IN this article I will describe and illustrate a common iron smoothing plane and a chariot plane.

Fig. 4 shows the casting for an iron plane of the first-named type. There is nothing special to be said about the pattern. It is precisely like its casting. Two curved sides, and two ends, each ⅛ in. thick, will be

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

prepared and glued upon the bottom, the merest shade of taper being imparted to the inside faces. The curved sides are properly cut from a piece of stuff which is planed to the depth of the pattern, its curves struck to the radius required, with a pair of trammels, and cut with paring gauge, chisel, and spokeshave. If a thin bit of stuff is planed, and simply bent to the curve, it will be of a less curvature at the top than at the bottom edge, and this will have an unsightly appearance; hence the reason for cutting the sweeped pieces from solid stuff. The bottom will be $\frac{1}{32}$ in. thicker, to allow of trueing up. The mouth will be a trifle narrower than the casting, for the same purpose.

The remarks made in the last article with reference to the soundness of the casting, and the operation of filing, will apply in the main to these examples also, and need not be repeated.

In thin patterns such as these, there is risk of the comparatively deep sides becoming rammed somewhat out of truth in moulding, and this not only involves more labour in filing up the outside, but also increases the trouble of fitting the wood-blocking. I need hardly say that the fitting of the blocking needs to be very close, and in its fitting there is the risk of fracture of the casting occurring if the blocks are driven in too hard. But the more accurate the inside faces of the casting, the less risk is there of fracture occurring. If the casting is not very true, therefore, it will be a judicious plan to true and smooth up the inside with a file before commencing to fit the blocks. Of course we cannot do very much in this way, but we can at least obliterate any rough excrescences; and if the space between the sides, measured at the top edge, is slightly less than that at the bottom, we can produce a fair approach to parallelism.

If several men in a shop were to club together to make several of these planes, it would pay to have a metal pattern—casting it first from a wood pattern made as here described. The metal pattern could then be filed all over carefully, and there would be no risk of its becoming rammed out of truth. All castings would be practically alike, the pattern would be everlasting, so that any number of moulds could be taken from it. This is a suggestion which holds good with regard to many other cast-iron or gun-metal planes.

The advantage of the use of an iron pattern is chiefly found, of course, when the pattern is like its casting, as in Fig. 4. When the casting is cored out as in Fig. 7, there is little advantage in the use of a metal pattern.

A pattern for a lever, to be cast in brass or gun metal, will have to be made to the dimensions in Fig. 5, also a pattern for the pinching screw, Fig. 6 A. In each case the dimensions will be slightly in excess of those of the drawings, to allow for filing, turning, and screwing—$\frac{1}{64}$ in. will be a proper allowance on the surfaces of the lever for filing, and $\frac{1}{32}$ in. on the screw for turning and tapping.

Fig. 4.

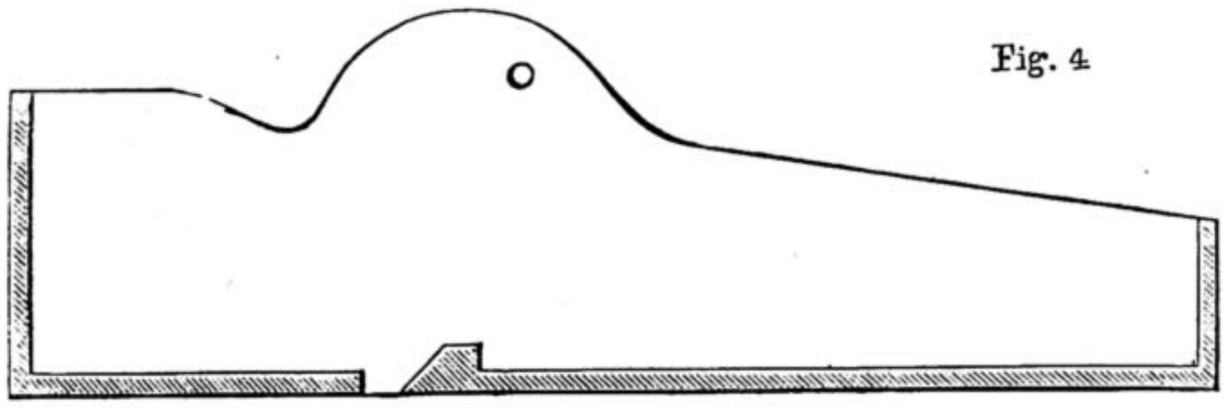


Fig. 4A.

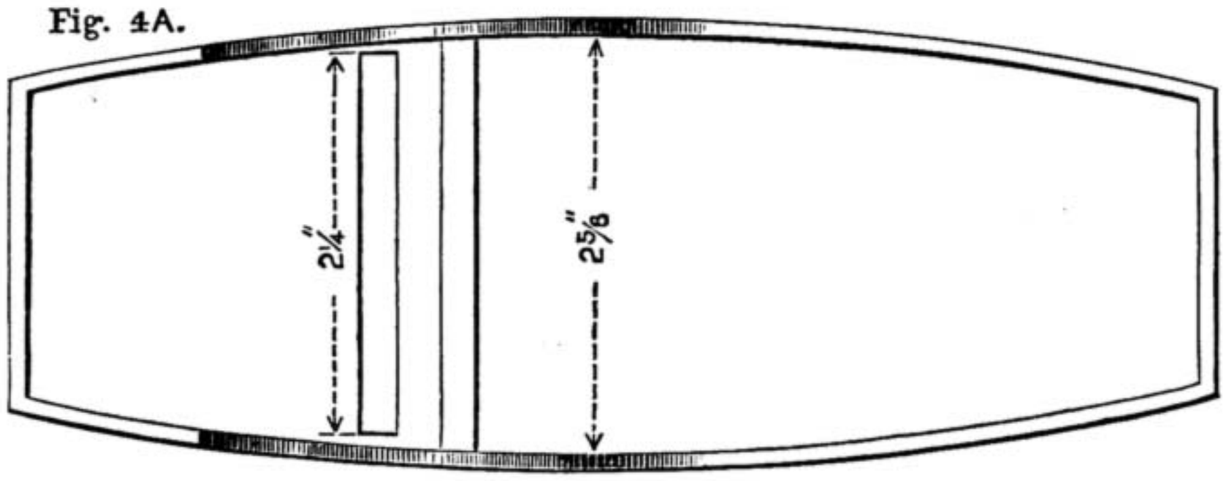


Fig. 4.—Casting for Iron Smoothing Plane: Section. Fig. 4 A.—Ditto: Plan.

Prepare two blocks of beech, rosewood, or ebony, and fit them into the iron carefully, using red lead paste to indicate contact, and tapping very lightly with hammer or mallet, so making a perfect bedding, without risk of fracture of the iron. The blocks should touch on the bottom, and also be shouldered to fit the upper edges neatly. When fitted, put in the wood screws. The screws should be driven in normal to the curve of the plane body, not standing askew; and their heads may stand a trifle above the face to allow of filing off level. Mark the outlines of the blocks, and work them to shape, Fig. 6. Use a parallel iron, as in the trying plane, make its bedding on the hinder block perfect, and notch the block to allow the tightening screw, A, to pass freely down. Mark the centres of the screws upon which the lever pivots, keeping them precisely at right angles with the centre line of the plane, and at equal heights from its base, so that the lever shall not stand askew. Drill holes of $\frac{1}{8}$ in. or $\frac{3}{16}$ in. diameter at these centres, file the lever true and smooth, and mark on its edges corresponding $\frac{1}{8}$ in. or $\frac{3}{16}$ in. "tapping" holes; drill and tap. Two button-headed screws will be preferable to those of the common form, which would require counter-sunk holes for their heads, and so weaken the metal near the edge of the plane. When these screws are inserted and the lever thereby pivoted, try its bedding on the cutting iron, and ease it where necessary, until it beds fair right across the iron.

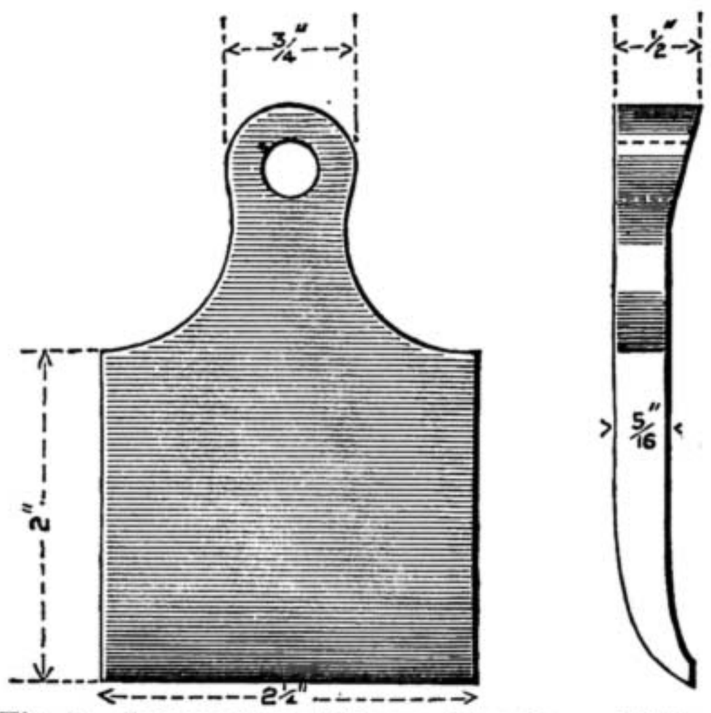


Fig. 5.—Lever: Front View. Fig. 5 A.—Ditto: Side View.

Now take the casting for the screw and chuck it in the lathe—either between centres or in some form of grip chuck—letting the free end run on the poppet centre. Turn first the end which has to be screwed, and then reversing it, turn the head. Mill the head—properly with a milling wheel in the lathe—or if such is not available, the serrations must be laboriously formed with the edge of a slitting or of a half-round file, the sharp edges being then removed with emery cloth. A milling tool used for this purpose consists of a hard steel wheel having a number of hollowed serrations around its circumference, and pivoted on the end of a stiff bit of bar iron so that it is free to revolve. The wheel may be about 1 in. in diameter more or less, by $\frac{1}{4}$ in. or $\frac{5}{16}$ in. in width. These serrations are cut in a lathe before the steel is hardened by means of a "hob," or master tap, set revolving slowly between centres, so gradually cutting the corresponding grooves in the wheel. The hob both turns the wheel and cuts the grooves. After hardening, the wheel is fit to cut a mulled head in a similar fashion. Thus, setting our brass screw revolving between lathe centres with its head next the poppet, support the shank of the mulling tool on the rest, and press the wheel against the edge of the screw head. The wheel will be thus set revolving by contact with the revolving head, and the pressure exercised will cause the hard steel to indent the soft brass, giving the counterpart of its grooves thereto. The latter must be run slowly, and the wheel be held steadily and stiffly to its work, to prevent slip, and the consequent formation of over-

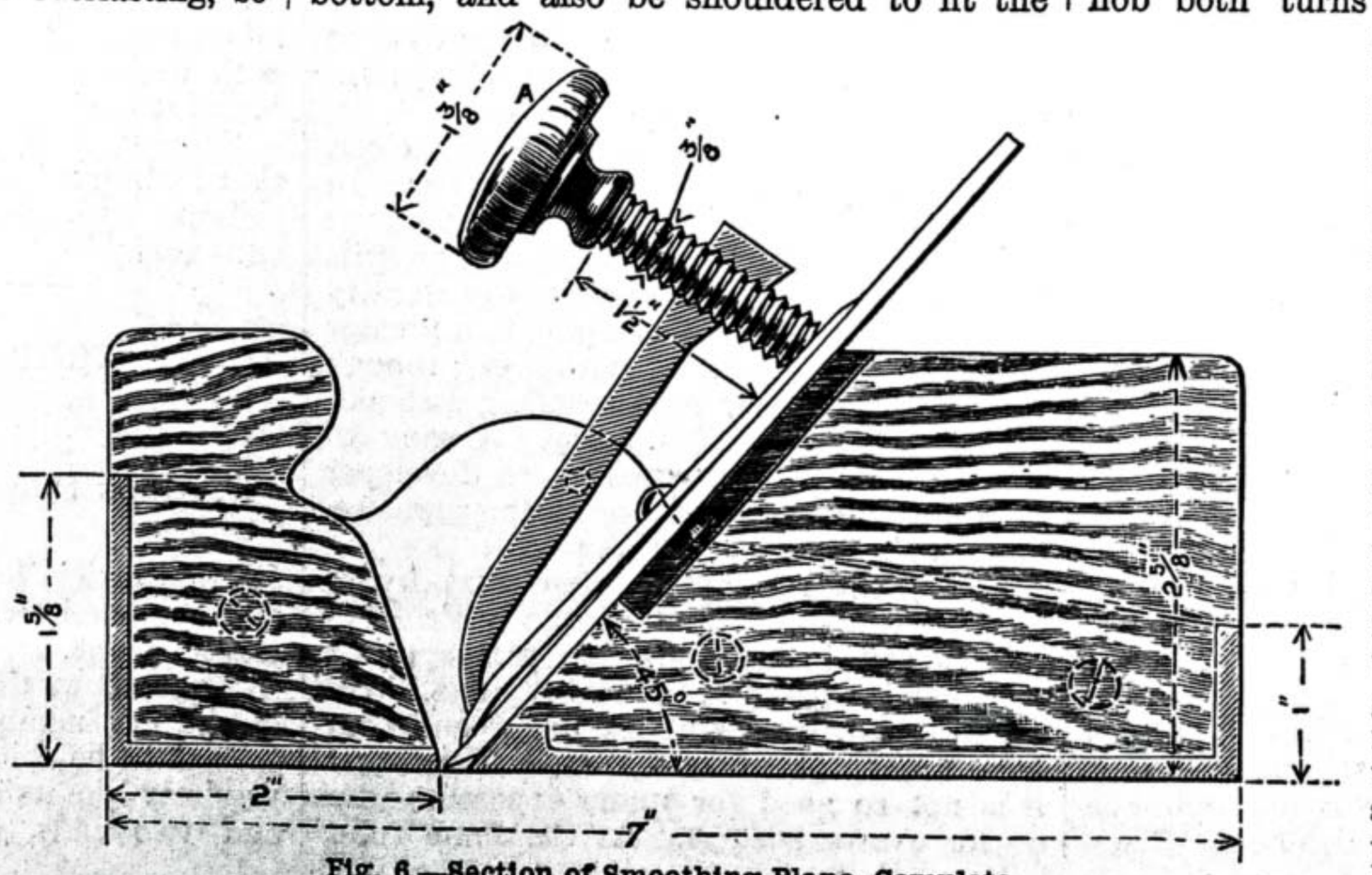


Fig. 6.—Section of Smoothing Plane, Complete.

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

lapping or of bastard cuts. Use $\frac{3}{8}$-in. dies for the screw. Drill the holes in the wedge to $\frac{5}{16}$ in. bare, and tap, and make the screw fit its tapped hole with as little slackness as possible.

The iron being now bedded, and the lever and screw fitted, slide the iron down into position, tighten it, note the mouth of the plane, and give to it such enlargement as may happen to be necessary to afford room for the escape of the shavings, but not a particle beyond that. Cleaning up the metal work with emery cloth, the wood work with glass paper, and polishing, will finish the plane.

Our next illustration is that form of smoothing plane called sometimes a "chariot plane." These are made in various sizes, but the dimensions given in the illustration, Fig. 7, are the most useful for general bench purposes. This plane differs from each of the forms yet described in this respect: that its pattern cannot easily be made like its casting, because of the presence of the bridge piece which takes the resistance of the wedge, and it is therefore properly cored out—that is, the interior is formed of a core made in dried sand, and prepared in a special box distinct from the pattern itself.

Fig. 8 shows the pattern of this plane with the outlines of the casting indicated thereon. Fig. 9 shows the core box by which the interior is formed. A comparison of the figures will render the following description clear:—

A piece of wood is planed to the thickness, A, corresponding with the inside dimensions of the plane, also to the depth, B, and one end is cut to the shape of the end, C. Upon this block are nailed the two pieces, D, D, forming the plane sides and the end E; and this completes the pattern. The portion marked F is the core print, into whose impression the core made in the box (Fig. 9) is placed. The core box is framed together with grooved ends, as shown in Fig. 9, and its inside length corresponds with the length, G, and its width with the width, A, in Fig. 8. Into this box are fitted the pieces shown, which correspond with the interior faces and fittings of the plane. Some of these, it will be observed, are nailed on the "bottom board," A, which is a piece of wood dowelled on the box bottom specially to carry them. The piece, B, which takes the resistance of the wedge, is slid through holes cut in the box sides, and is drawn out sideways after the core is rammed, and before the box sides are taken apart. Screws, or else wooden clamps, hold the box sides together during the ramming of the core.

I think this description will be quite clear even to those who do not happen to have any knowledge of the processes of pattern making and of moulding.

The pattern might be made equally well by making the core print continuous with the outsides of the plane, in which case the pieces which are to form the plane sides would have to be planed to thickness, cut to outline, and put on the inside faces of the core box.

It is a matter of indifference which method is adopted; the important point in either case is to have absolute coincidence of dimensions in corresponding parts of pattern and core box, so that all thicknesses, etc., shall be accurate in the casting.

The filing and fitting generally will have to be done pretty much on the same lines as in the other examples. The under face of the bridge piece should have careful attention, in order that the wedge shall slide smoothly, and bed equally on the iron. The upper face of the V piece, B, in Fig. 7, must be filed very true also, so that no possible rocking or chattering of the iron, due to imperfect bedding, shall ensue.

In order to prevent the bruising of the plane—which follows on frequent repetition of hammer blows at the hinder end, for the purpose of loosening the wedge or cutting iron—it is a frequent practice to tap a screw into the hinder end. The hammer blows are then delivered upon its head, and the body of the plane need never be struck. A $\frac{1}{4}$-in. button-headed screw will be suitable, and it should be tapped in at about the central portion of the face of the back end of the plane. The screw is turned in until its head beds down firmly upon the face.

It will be noticed that the bevelled facet of the iron is placed upwards in this example, instead of downwards, as in previous examples. This arrangement is frequently followed in iron planes, as tending to sweeter working. The angle at which the iron is set in the block is correspondingly lower, so that there is really no difference in cutting angle in the two cases. In the former, however, while the lower or clearance angle is being constantly varied by resharpening: in this it remains constant, while the angle of top rake varies with the sharpening of the bevelled facet.

The great advantage which iron planes have over those of wood is, first, that they cut sweeter than wood, being more entirely rigid; and the other, that they are unaffected by changes of temperature. For cabinet makers, pattern makers, and joiners they are, therefore, of much service. There is a good deal of elasticity inherent in a plane made of wood which is absent in those of iron. Elasticity

Fig. 7.

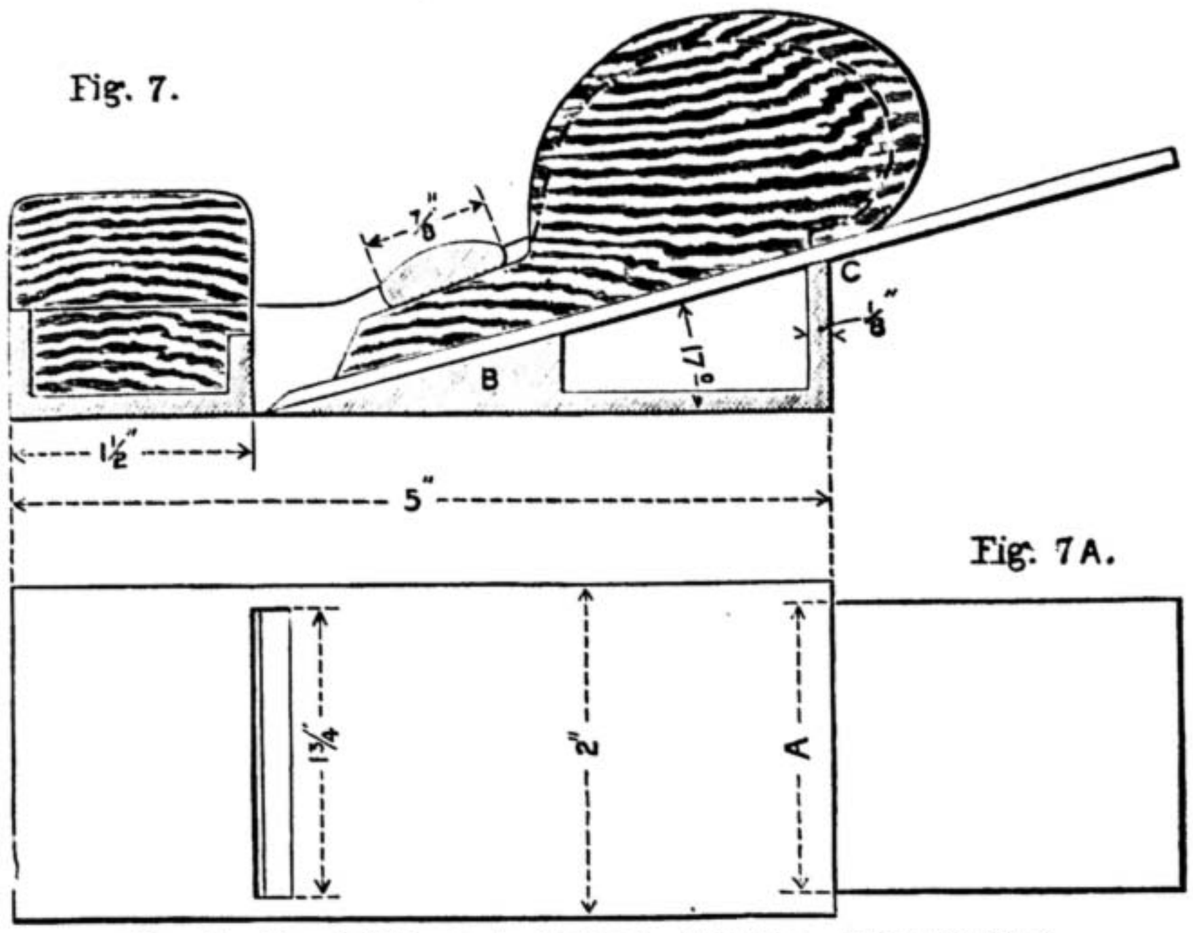


Fig. 7.—Chariot Plane, in Section. Fig. 7 A.—Ditto, in Plan.

Fig. 7A.

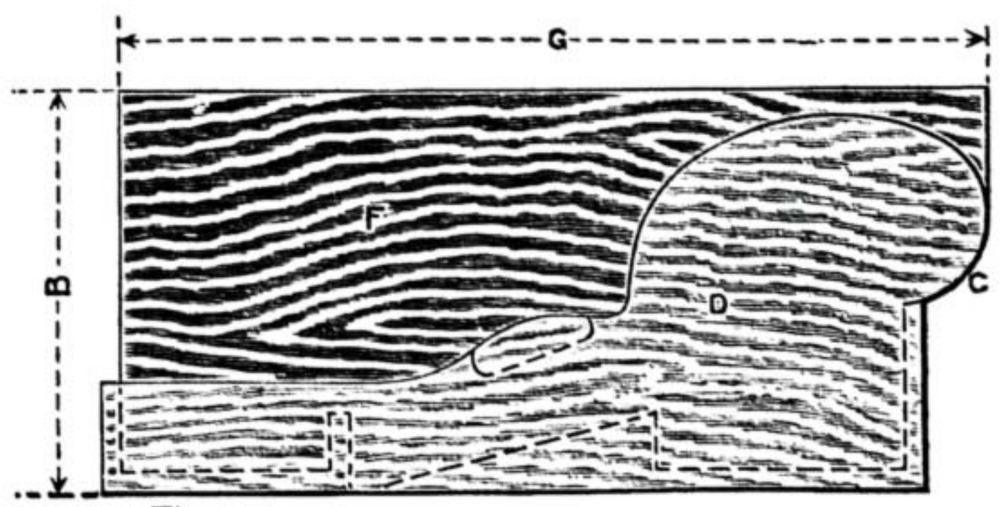


Fig. 8.

Fig. 8A.

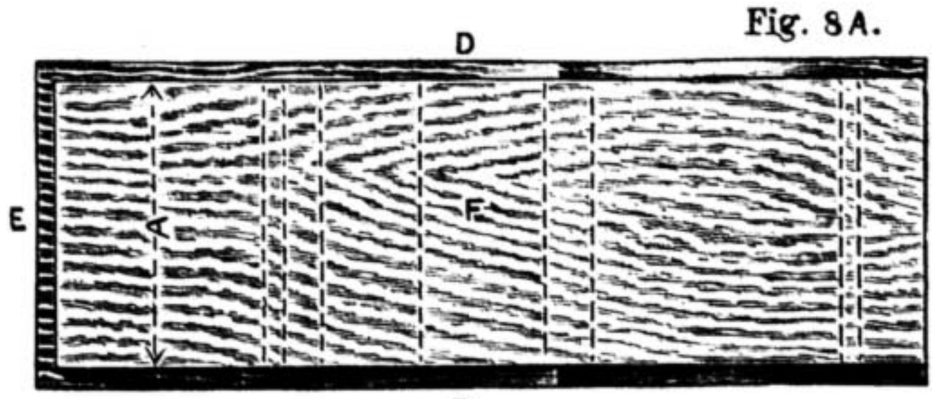


Fig. 8.—Pattern of Chariot Plane. Fig. 8 A.—Ditto: Plan.

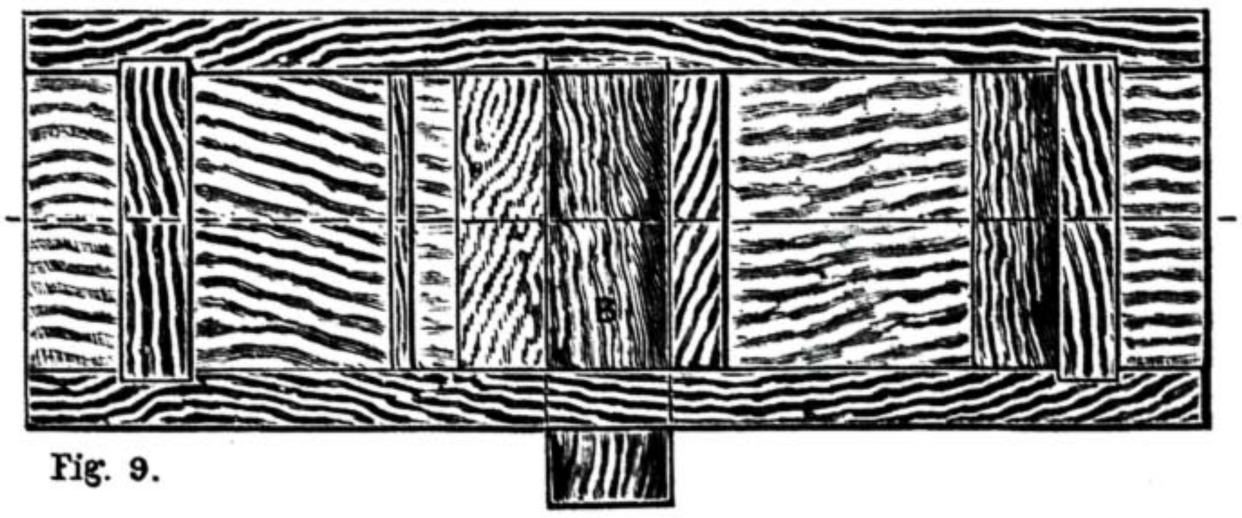


Fig. 9.

Fig. 9A.

Fig. 9.—Core Box, viewed from Top. Fig. 9 A.—View of Side and Section.

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

of wood tends to produce more or less of chattering and choking, especially on working hard, cross-grained timber. A good iron plane having its cutting iron well fitted, well bedded, and secured, will operate in any direction or condition of the grain in a superior manner to the best wood plane.

If any workman finds difficulty in following out the instructions I have given, I trust he will communicate with the Editor and so give me an opportunity of putting him in "Shop." I shall also be glad to hear from any workman who may be desirous of information on the method that he may best follow in making any special tool that he may require. I shall always be ready to help to the best of my power.

NOTES FOR ELECTRO-PLATERS.

BY GEORGE EDWINSON BONNEY.

II.—ACÈTATE OF POTASH—ACETATE OF SODA—ACETATE OF AMMONIA—ACCIDENTS—AGATE—ALKALI—ALUM—ALUMINA—ALUMINIUM—ALLOY.

Acetate of Potash.—French: *Acêtate de Potassa.* The name of this salt is sometimes printed potassic acetate, and acetate of potassa. This salt is used in the preparation of metallic acetates, and in the formulæ of some brassing solutions. It is obtained by neutralising carbonate of potash with acetic acid, evaporating the liquid to dryness, and heating the salt to fusion. It is usually met with as a white, foliated, crystalline mass. It is extremely deliquescent, and easy soluble in water.

Acetate of Soda.—French: *Acétate de Soude.* This salt has uses similar to those of acetate of potash. It is prepared commercially on a large scale during the process of manufacturing acetic acid. The crystals of this salt are large, colourless, and transparent. They effloresce in dry air, and are readily soluble in hot or cold water, and in alcohol.

Acetate of Ammonia.—This is named in some old recipes "spirit of minderus." It is a liquid, prepared by saturating strong acetic acid with carbonate of ammonia.

Accidents.—Electro-platers and workers in trades where "chemicals" are used are liable to serious accidents, caused by ignorance of the nature of the materials, or a carelessness born of familiarity with their uses. These accidents are of such a nature as to demand the prompt application of remedies. These should be always kept handy, on an easily accessible shelf in the workshop, and every workman should know how to apply them when necessary. The accidents most likely to happen are those arising from careless handling of bottles containing acids; reckless handling of cyanide of potassium, or carelessness in working with its solutions; mixing one chemical with another in ignorance of its properties; indiscriminate experiments without any previous plan, "just to see what will happen, and what the mixture will do;" and poisoning of the hands and face through absorption of poisons in cuts and other injuries. To these may be added, injury to breathing and digestive organs by inhaling poisonous fumes whilst preparing pickles and other solutions.

Only a madman, intent on suicide, would attempt to swallow any of the poisonous preparations used in the workshop and laboratory, therefore, injury caused in this way can scarcely be regarded as an accident. Provision is made in these notes for all contingencies, and full instructions are given to guide any person in dealing with all accidents likely to occur. In addition to cautions respecting the proper and improper uses of dangerous substances given under their respective heads, consult also the sections on *Antidotes*, *Poisoning*, *Hygiene of the Workshop*, etc.

Agate.—This is a precious stone with a composition resembling flint, and almost identical with that of chalcedony, opal, quartz, and rock crystal. It is extremely hard, and is capable of receiving a high polish, only a little inferior to that of the ruby and diamond. It is much used in furnishing chemical balances with bearing points, and in the manufacture of the best burnishers in use by electro-platers.

Alkali.—This is the Arabic name originally given to potash, but now applied to those substances which are opposed in their nature to acids, as having the property of neutralising their action when added to them, and forming with them compounds named salts. They also restore the blue colour to litmus and other vegetable blues that have been turned red by acids. In commercial circles the term alkali is usually applied to carbonate of soda, to soda crystals, and sometimes to caustic soda. The principal alkalis are ammonia, lithia, potash, and soda. The two last in various forms and combinations are largely used by electro-platers. An alkaloid is a vegetable substance having many properties in common with the alkalis.

Alum.—Common alum is a complex compound of sulphate of potash and sulphate of alumina, represented by the chemical formula $Al_2 K_2 4SO_4 + 24H_2O$. It is obtained on a large scale whilst roasting shale containing clay and iron pyrites. *Ammonia alum* contains ammonia instead of potash. *Soda alum* contains soda instead of potash. It is more soluble and more difficult to crystallise than the other alums. *Chrome alum* contains the metal chromium instead of aluminium. *Roman alum* is made from alum stone, a felspathic rock. *Alum cake* is a mixture of silica and aluminium sulphate. It is used as a base by dyers. A solution of common alum in water has the property of absorbing the heat rays of the spectrum, whilst it allows the light rays to pass through freely. Its crystals readily dissolve in their own weight of boiling water, but form again as the water cools. Alum is an important ingredient in mixtures for colouring gold, and in the manufacture of acetate of aluminium. (See *Colouring Mixtures.*)

Alumina.—The earthy oxide of aluminium. It is found combined with silica in clays and felspathic rocks. It is the source of all our supplies of the metal aluminium. "It occurs native in a nearly pure and crystalline state as *corundum*, *ruby*, *sapphire*, and in a less pure state as *emery*." (Roscoe.)

Aluminium.—Sometimes named and printed *Aluminum.* French, *Alumine.* Chemical symbol, *Al.* A bluish-white metal obtained from alumina. It is the lightest of metals. Specific gravity 2·6. Combining weight 27·4. Melting point 700° C.

It stands third on the list of useful metals for tenacity; fourth for malleability; and sixth for ductility. Hardens when drawn or hammered, and is capable of receiving a high polish, nearly resembling that of silver. Does not readily tarnish in air. Castings of this metal acquire a delicate sharpness. Aluminium is not soluble in nitric or sulphuric acids, but is soluble in hydrochloric acid and in the alkalis. It is readily soluble in solutions of cyanide of potassium, ammonia, and the caustic alkalis. It is electro-positive to antimony, bismuth, cadmium, carbon, cobalt, copper, gold, iron, iridium, lead, manganese, mercury, nickel, palladium, platinum, silver, tin, and zinc; electro-negative to magnesium, and metals of the alkalis and alkaline earths. Owing to its characteristics and ready solubility in the free alkalis of depositing solutions, it is not suitable as a base on which we may deposit a coat of the precious metals. Articles made of pure aluminium will not receive an adherent deposit of gold or silver in the ordinary plating solutions, but will dissolve if left in them and spoil the solutions. This is a serious drawback to its use in the manufacture of ear-rings and light articles of jewellery. "Aluminium solder contains six parts of aluminium, four parts of zinc, and ninety parts of copper." (Bloxam.)

Copper, alloyed with ten per cent. of aluminium, so closely resembles gold in colour as to secure for it the name of aluminium gold. This alloy makes up well into pencils, chains, watchcases, and similar articles, and is most suitable as a base on which to deposit a good coat of gold. In the hands of the electro-gilder it should be regarded as brass, and treated as such in preparing it for the bath. An alloy of one part of silver added to three or four parts of aluminium is said to be strong, light, and very serviceable, being four times as light as silver. An alloy of steel with aluminium has been patented, and is said to be very useful.

Aluminium has been electro-deposited from a solution of aluminium and potassium, also from a solution of the double chloride of aluminium and ammonium. It has also been deposited from a solution of its chloride. No practical use has been made of the results thus obtained. Information respecting the processes employed in the reduction of aluminium may be found in "Watt's Electro-deposition," pp. 360—363. "Salts of alumina, when moistened with a solution of nitrate of cobalt and heated in the flame of a blowpipe, assume a characteristic blue colour." (Fownes.)

Alloy.—"To alloy," in the common acceptation of the term, is understood to mean the mixture of a baser metal with a finer one to depreciate the quality of the latter. But this meaning of the term has no signification or weight with the metallurgist, who mixes metals and melts them together to achieve a given purpose apart from the thought of debasing a fine or a precious metal. Alloys are usually formed by melting the metals composing them in a furnace, but they have been and can be formed by electro-deposition. Copper and gold may be deposited together in varying proportions to form red gold. Silver and gold may be also deposited as an alloy, the effect in colour being a pale yellow inclining to green in proportion to the quantity of silver deposited with the gold. Copper and zinc may also be deposited together to form brass or bronze, and copper and nickel to form German silver. The metals to be deposited may be melted together and cast in the form of a plate, or an anode plate of each metal may be hung in the depositing solution. The electro-deposition of alloys is far more difficult and uncertain than the deposition of a single metal by itself. Although the two metals to be deposited together are present in the solution in the right proportions to produce the desired alloy, and although they are also rightly

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

proportioned in the anodes, the inexperienced depositor cannot be sure of success, for the deposit will vary in its character as the strength of the current of electricity varies, and the temperature of the solution alters. Only skilled experience can determine the right conditions all round, but a few hints may be helpful, and these will be found under the heads of *Brassing*, *German Silver*, *Gold*, *Deposition*, etc. Alloys of metals have superseded plain metals as bases for the electro-deposition of gold, silver, and nickel. The use of copper as a base for silver-plating has been superseded by brass, and this in its turn by whiter alloys resembling silver, such as German silver, nickel silver, and silveroid. It has also been displaced as a base for gold by such alloys as yellow brass, pinchbeck, and aluminium gold. Alloys of lead with tin and copper to form pewter and britannia metal have been largely used as bases for silver, but they are being superseded by the stronger and better white alloys now employed in the manufacture of best plated goods. This is a distinct gain to the electro-plater and to his customer, for the better alloys are not only less troublesome to plate, but also look well and wear longer.

(*To be continued.*)

FRAMES À LA MODE.

BY J. W. GLEESON-WHITE.

ARTISTS' DESIGNS FOR FRAMES — WHISTLER'S FRAMES—FRAMES BY MENPES—DECORATION OF ROOM IN JAPANESE STYLE—FRAMES SHOULD BE SUITED TO PICTURES — STEEL FRAME — FRAMES IN NATIONAL GALLERY—FOREGROUNDS ON FRAMES—OLD STYLE FRAMES—CHOICE AND POSITION OF PICTURES—FRAME COVERED WITH SACKING—FLAT OAK FRAME, GILT—FRAME WITH PILASTERS—WHITE MOULDED FRAMES—FRAMES IN FORM OF MEMORIAL TABLETS—TRIPLE FRAME—FRAME WITH FRET WORK—MENPES' JAPANESE FRAMES—FRAMES OF ROUGH SAW-CUT WOOD — FRAME WITH MOULDINGS AND PILASTERS — CORNER OF FRAME FOR ETCHINGS—WHITE FRAME STRIPED BY HAND —CONCLUSION.

ONE marked feature in the artistic temperament of to-day is that the painter is by no means indifferent to the setting of his picture, and having polished and wrought his jewel, no longer allows a mere workman to set it as he will. On the contrary, he is not only apt to design the frame himself, and bestow much thought thereupon, but, unless appearances are deceptive, occasionally does not disdain to add certain decorative adornments with his own hands.

Of modern artists who have specially distinguished themselves in this respect, Sir Frederic Leighton, P.R.A., Mr. Poynter, and Mr. Holman Hunt, may be named representing those who design their own frames upon the more conventional lines, but yet distinctly intended for the actual picture they enclose; while for those who have gone farther and pressed novel materials into their service, or struck out completely independent methods, the late Dante Gabriel Rossetti, Mr. Whistler, and Mr. Mortimer Menpes may be cited.

Since the frames of the first group are those calling out all the resources of the professional frame maker they do not concern the object of this paper; while those who were fortunate enough to see the two exhibitions of Mr. Rossetti's work, held respectively at Burlington House and the Burlington Fine Arts' Club, will realise that the gorgeously-designed shrines he adopted belong to the province of the carver and gilder, since their technical manipulation demands the highest skill to carry out the original design of their inventor.

Mr. Whistler, however, with still more novel treatment, has often suggested many motives that an amateur might paraphrase, if not actually copy. This artist, too, devoted no small thought to the production of novel and decorative frames, for water colours, pastels, and etchings, which are more likely to form the staple of the amateur's collection. To Mr. Whistler is probably due the more frequent employment of white frames, which have of late found such high favour, and most deservedly acquired it, for the white border is most effective, or, to speak more exactly, the white *and grey* borders, for the shadows cast by the projecting mouldings are an integral part of the scheme, and all-important in the production of the desired effect. Mr. Whistler was, perhaps, also the first English artist to forsake the monotony of ordinary yellow gold, and select from all the shades of metallic lustres from silver to copper colour; at times adding actual colour in broken Japanesque patterns of stencil work to the various shades of bronzes (as they are often called) that he selected.

Mr. Mortimer Menpes went still further afield in search of novelty, and brought home from Japan native-made frames of exceedingly novel fashion, which delighted the art-loving public at his exhibition of Japanese drawings, as much by their intrinsic beauty and simplicity as by their newness. The effect of his show was, perhaps (in spite of Mr. Whistler's Harmonies in Various Colours of previous years), the prettiest thing of its kind ever seen in England. For the benefit of those who were unable to visit it, a brief description as it looked on the morning of the private view may be pardoned. A gallery of moderate size was hung with material strained tightly over the walls, looking like silk in its texture, of a pinkish-purple colour—the colour of a particular chrysanthemum beloved of the Japanese, it was said. Festoons of the same material hung stiffly around the upper part of the walls, the ceiling was clad in white, the floor and the central settee being covered with a greyish-white felt; add to this a pure white chair and table, by the side of which a Japanese female attendant, in native costume of harmonious, low-toned, embroidered silks, with a poppy colour bow in her lustrous black hair, kept guard over the catalogues, and the room itself is suggested. But this was, of course, the background only, for the pictures—those in frames to be more fully described—hung in irregular fashion, like flights of birds on a Japanese fan, across the walls. These frames were of black and white for the etchings, and every shade of silver, copper, and gold for the water-colour drawings. It was hard to say which detail was most valuable in the general scheme, but since we cannot have peach-coloured silk hangings, or Japanese handmaidens, it will suffice to consider for our argument's sake the frames as being the next important item, after the pictures they enshrined.

In face of an easy objection that the pictures are of infinitely more importance than their frames, the fact may be frankly conceded. Yet while the face of an English maiden is more beautiful than her dress, she does not neglect the latter, or does so at her peril. The binding of a book is of small consequence compared with its contents, yet a tasteful and decorative cover is rightly held to be a necessity for a book of any value. Perfection, our ultimate aim, demands care for the trifles as much as for the important features; and a regard for beautiful frames by no means implies a neglect of appreciation for their contents. It is just those artists and amateurs who recognise the more subtle beauties of form and colour—those who demand *every* quality in a good painting—who also insist on the frame fulfilling its true purpose.

Briefly the ideal frame may be held to be one that best suits the picture, but keeping this end in view it may be as beautiful in itself as skill or thought can make it, provided that it never forces itself into the first place. Like a well-played accompaniment to a solo, it is only after the solo is ended that one should recognise how beautiful in its unobtrusive support and self-effacement the accompaniment was.

What a frame should not be was exemplified in a striking example in a recent show, when a portrait of Madame Sara Bernhardt, by Bastien Lepage, was exhibited in "a frame of carved polished steel. The completion of same took two and a half years, at a cost of no less than £720. It is considered a perfect work of art"—so ran the catalogue. Naturally such a paragraph set one looking at the phenomenal frame, in itself no doubt an admirable work of art, but challenging directly rival interest with the exquisite panel it professed to adorn. Small wonder if to many the portrait was remembered chiefly by its frame. This is, of course, a "frightful example," as a lecturer would say, and one fortunately out of the reach of most readers of this paper, who are not likely to copy its faults, but may easily err in the selfsame fashion by making the frame the chief end, and afterwards choosing a picture that happens to be of suitable size to fill up the previously planned opening. This is as absurd as it would be to design a wedding dress and, when it was finished, choosing a bride for yourself who happened to fit it.

There are frames which cannot well be made at home, and fortunately they are just the ones that are least suitable for the average house. Of burnished gold arabesques and marvellous plaster volutes and scrolls no word in praise or blame; they have their right and wrong use. In the National Gallery there are splendid examples, and horrors worthy of all rebuke are not unknown in our large exhibitions. Some on view this year, wherein the foreground of the picture was carried into high relief on the frame, or where by cheap symbolism (a tennis racket and ball for example) the motive of the picture was repeated on the frame, deserve a word of dispraise. But it may be sadly said, if the owner's taste is unconscious of the vulgarity of such meretricious adjuncts, there is little use in quoting instances. Even if he be polite enough to accept the warning and henceforth shun that particular form of vice, he will probably develop others seven times worse. If asked to define "good taste," it is to be feared "our own" would be the inward reply, whatever ingenious phraseology we used to express it. But there are canons of good taste easy to acquire in these days of much teaching, and while the best may sin at times, yet a man who has read his Ruskin and Pater, who has some knowledge of the tendency of modern art, is likely to abstain by a sort of acquired instinct from the most flagrant examples.

The orthodox gilded moulding, the ordinary oak or ebonised beading, and the once popular Oxford frame may be mentioned

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

only to be dismissed without comment; their merits and demerits ought to be self-evident now. Each and all are the very best in the right place, and of varying degrees of badness in the wrong use. While simplicity looks so easy to novices, older hands know that perfect simplicity is the outcome of art, the *ars celare artem*, that is a proverb for refined expression. Novelty has a charm, say what one will; half of our lives are spent in search of it. The love of change is even more dominant than that of life or food, as we see by the countless numbers who leave every apparent comfort in search of what is new. Therefore let us not despise it, and profess to like old things best, for it will be found that, as a rule, it is only when the old has become rare, and

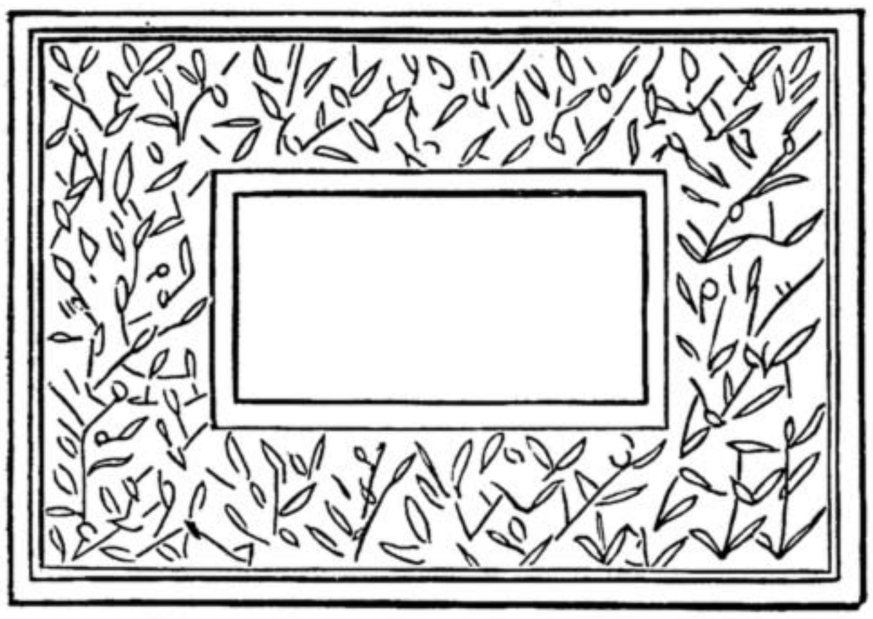


Fig. 4.—Ornamented Double Frame.

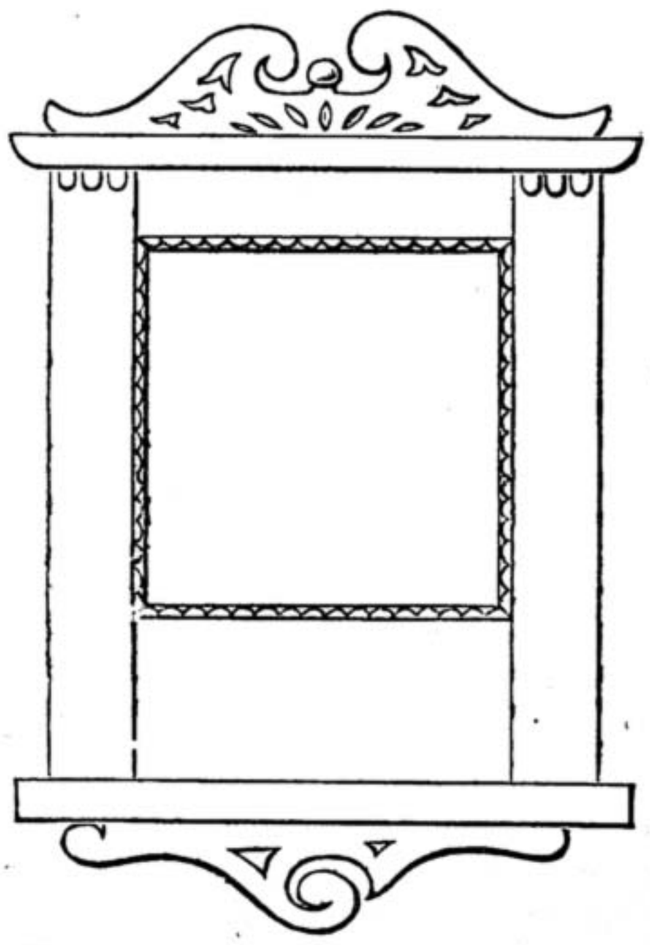


Fig. 6.—Memorial Tablet Frame, No. 2.

therefore novel once more to common experience, that one begins to value it.

Again novelty is, like morality, a question of latitude. To an Orkney Islander a worn-out fashion of seasons ago in London may come with its original zest. Mindful of this, I have selected many examples that are well known to dwellers in large towns, nor have I, on the other hand, kept to the theory which I have tried to expound. It is so easy to quote the text, so hard to live up to it. Consequently, if the suggestions to be made embrace some flagrant examples of bad taste, I can but cry Peccavi! and implore those who discover them on no account to be tempted into imitating them, but rather practise a Spartan-like renunciation, and shun their meretricious allurements. But to the point; a preacher tries to bring you to a happy frame of mind by special pleading and winsome arguments. The happy frame I would bring you to, is the one of those to be described that suits you best.

The ordinary formula that oil paintings only suited a dining-room, water colours a drawing-room, and engravings and etchings a library or morning-room, is as conventional and absurd as most other formulas. The only sound advice is to choose the picture you like best, be it bad or good, hang it where it may be seen (otherwise why buy it?), and proclaim your own taste in your own house — better personal taste of the most vulgar kind, than badly digested "culture" which is a mere laughing-stock. I think as I write of a "Rossetti" that its owner fancies makes the most vulgar of vulgar drawing-rooms a temple of beauty. The room certainly fails to kill the picture, although it tries to do so; but the one bit of good art makes the rest more pinchbeck and more vulgar than ever. Then I recall another room plainly furnished in almost lodging-house simplicity, where a Corot reigns, yet the splendour of the picture, having no vulgarity to overcome, stands out the most precious thing of course, but making a commonplace room beautiful by its own great beauty.

This may be discursive, but frames are so varied, and their kindred pictures so near the subject, that it is harder than usual to keep to the point.

First, to dispose of a few simple materials. This year a frame made of common sacking, either in its native tint, or more often dyed a dull green or heavy peacock-blue, has found many admirers. The pictures in such were surrounded by a gilt moulding of rather ornate pattern as a rule, about half an inch to an inch wide, according to the size of the painting, then a plain deal border covered with the canvas or sacking surrounded the whole; this was at least six inches wide, often a foot, for large pictures. If the whole moulding and sacking is gilded in one shade of gold, the effect is really beautiful in itself, and isolates the panel from its surroundings. (Fig. 1.)

Admirable, also, was a frame of plain, flat oak, gilded to show the grain of the wood. About a fifth of its width from its edge was, apparently, a row of brass-headed nails, touching each other, or else a moulding inserted that simulated nail heads. (Fig. 2.)

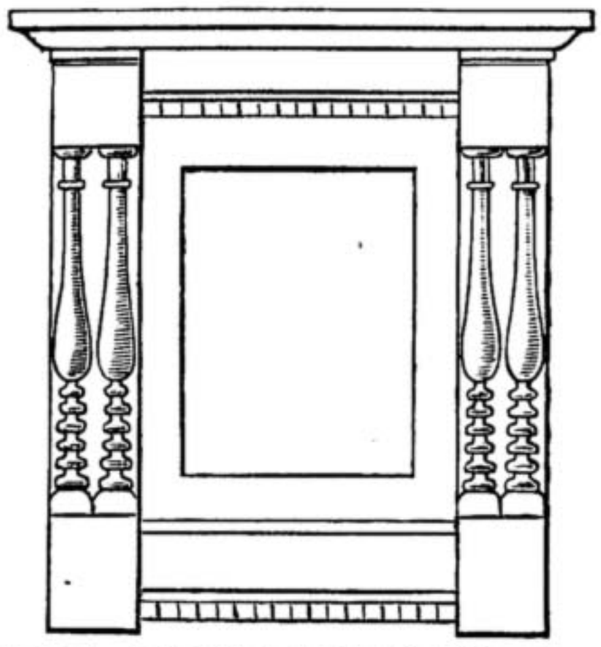


Fig. 3.—Effective Frame for Figure.

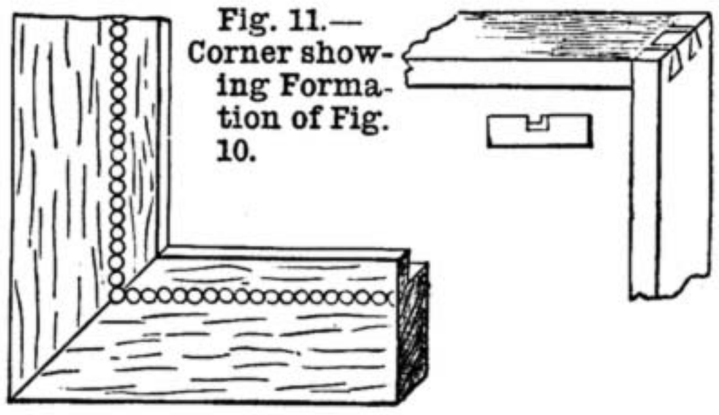


Fig. 11.—Corner showing Formation of Fig. 10.

Fig. 2.—Frame of Plain, Flat Oak.

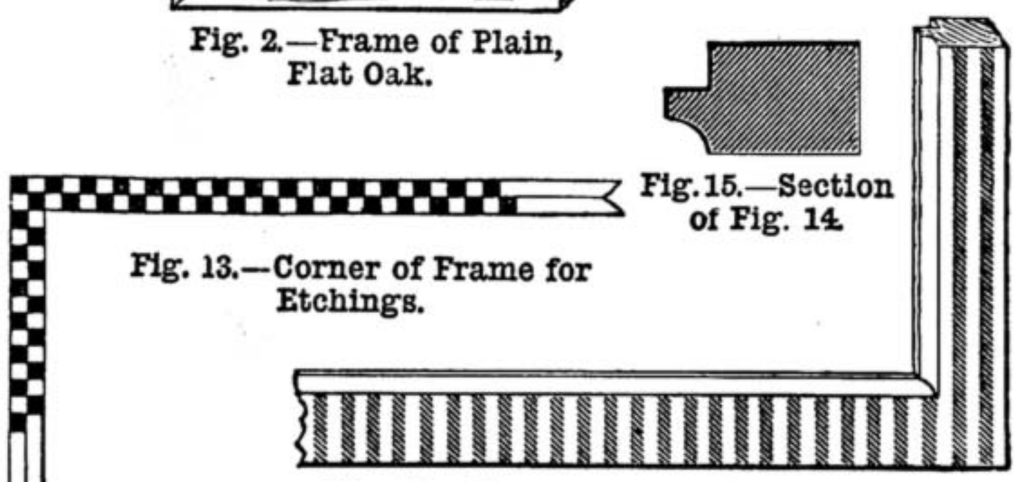


Fig. 15.—Section of Fig. 14.

Fig. 13.—Corner of Frame for Etchings.

Fig. 14.—Frame used by Mr. Whistler.

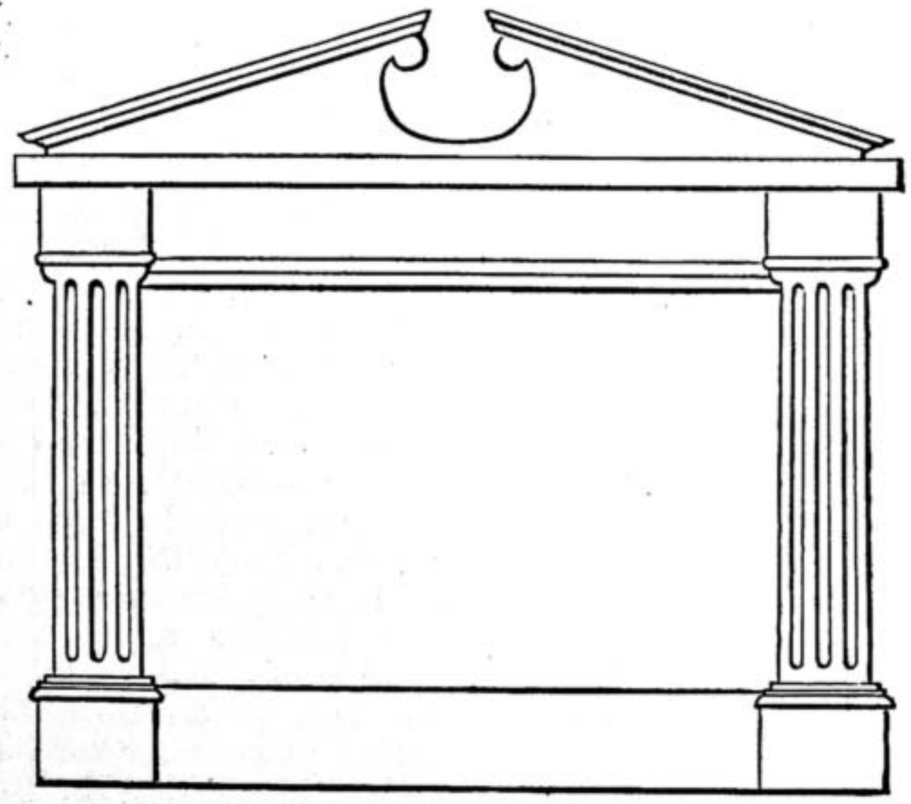


Fig. 7.—Memorial Tablet Frame, No. 3.

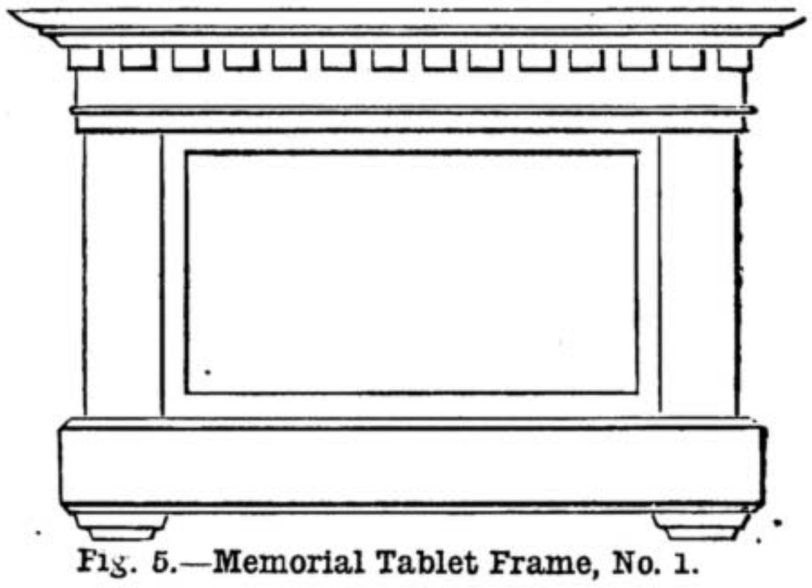


Fig. 5.—Memorial Tablet Frame, No. 1.

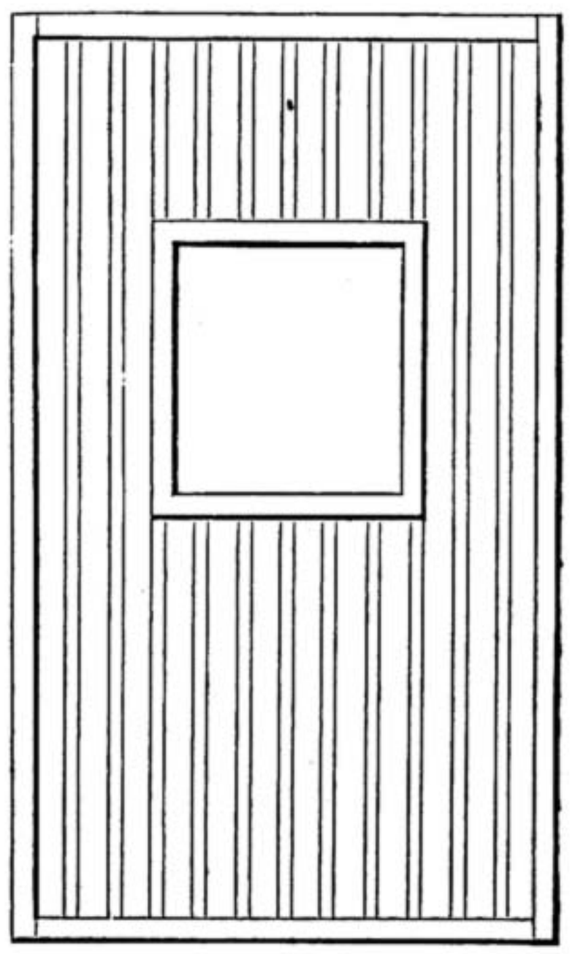


Fig. 10.—Rough Memo. of Frame by Menpes.

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

The frame in Fig. 3 is a most effective style for figure subjects, yet very simply made, as all the pseudo-classical decoration is applied, the twin pilasters being merely a bit of ordinary turned work, cut in halves. The mouldings and fillets are of the most elementary character, yet the whole frame, finished in pure white enamel, is exceedingly effective. It may be worked in oak and gilded with bronze powder, or in ordinary deal, with the usual plaster and gold-leaf finish. No frame of those chosen is less costly, and few look better when on the walls, as I can prove from experience. Of course, this idea may be enriched by the use of lincrusta frieze decoration, with very happy effects. In this and other frames to be described when a flat surface with low relief ornament is needed, lincrusta is admirable, being inexpensive, easily worked, and a capital surface for after decoration.

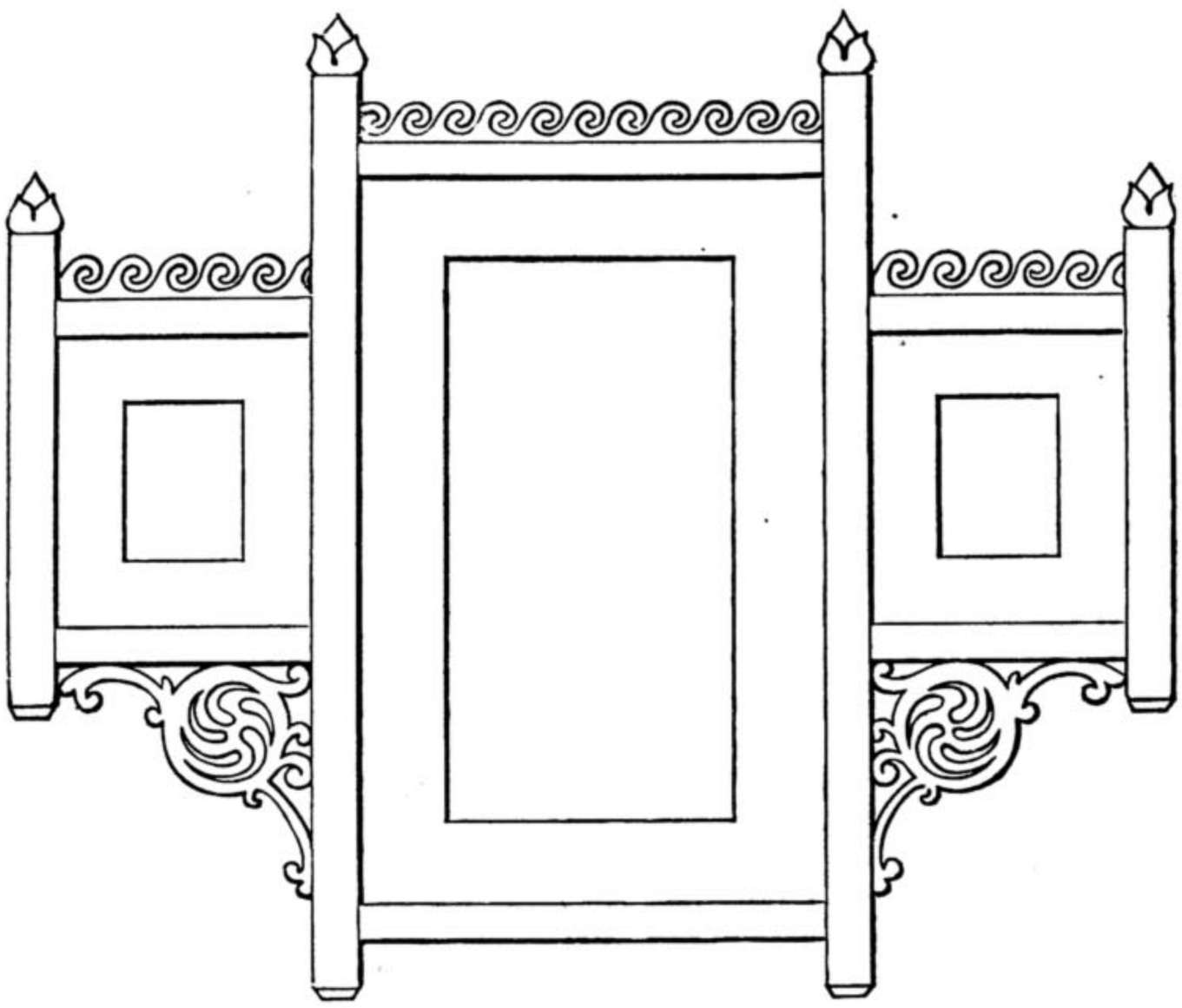


Fig. 8.—Suggestion for Triple Frame in Joinery and Fret Work.

The design (Fig. 4) is intended to represent a white moulded frame, with an inner frame also white, the space between the two being filled with the monochrome paper of quiet design, such as one sees on the fly leaves of modern books. The same motive with richer mouldings and lincrusta, or Japanese leather paper substituted for the white and monochrome paper, makes a very effective and useful frame for water colours of a certain class, or oils. The proportions must be decided by the character of the painting; some subjects demanding a wide margin, others exacting very little, lest they are overweighed by their surroundings.

A society for the promotion of art has of late constructed frames somewhat after the fashion of the memorial tablets in churches of the Wren period. These, either finished in white, worked in dark rich polished woods, or solidly gilt, have probably a wide popularity in store. Every church suggests motives for adapting in this way, and the few sketches (Figs. 5, 6, 7) are intended less as designs for reproduction than rough memoranda of possible shapes worthy of being tried. The amateur who makes a good frame does a good thing, better than a useless piece of fret work, or an irritating dust collector of some passing fancy work. If he is not carpenter enough to mitre and dovetail it himself, he may yet draw out the design, and see that it is carried out by an ordinary workman,

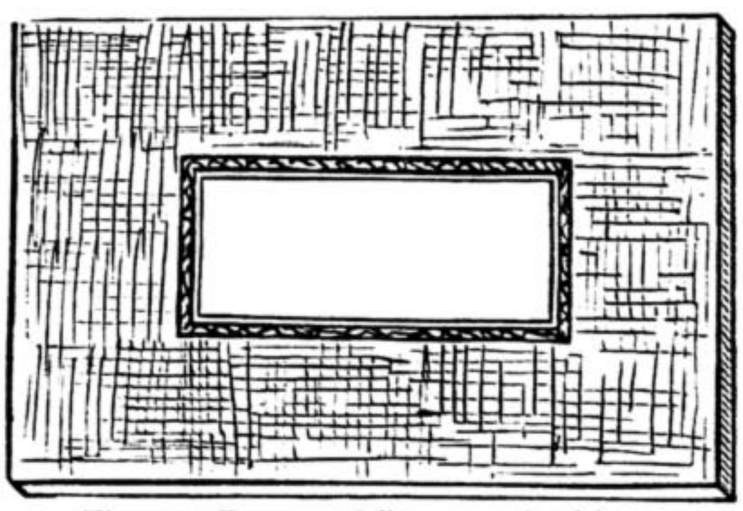


Fig. 1.—Frame of Common Sacking.

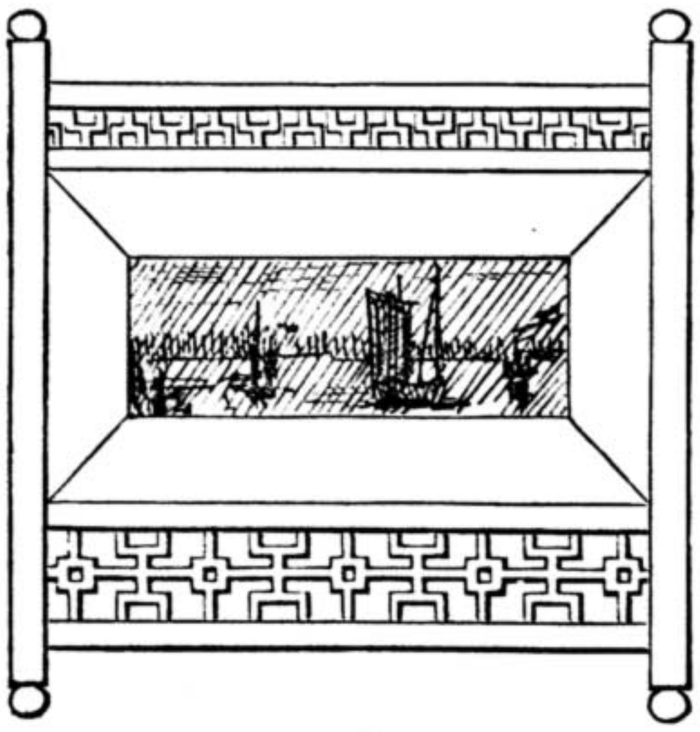


Fig. 9.—Gilt Frame with Oak Fret-work Strips.

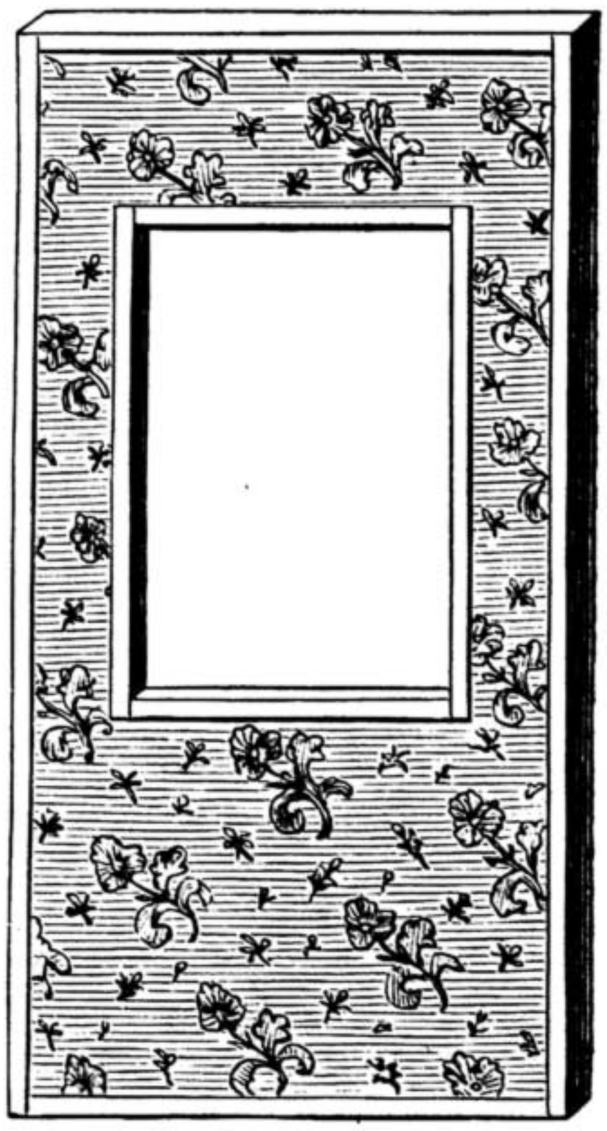


Fig. 12.—Frame, enclosing Panel covered with Japanese Leather Paper between two Mouldings.

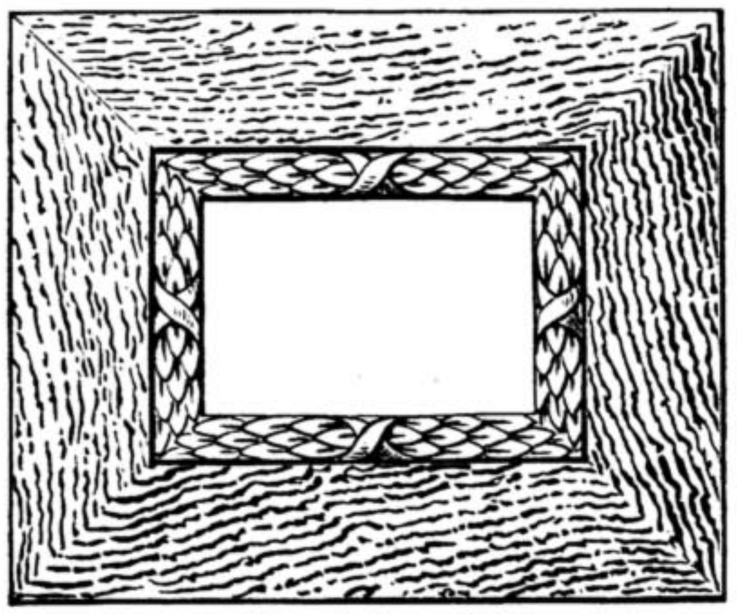


Fig. 17.—Rough Saw-Cut Frame.

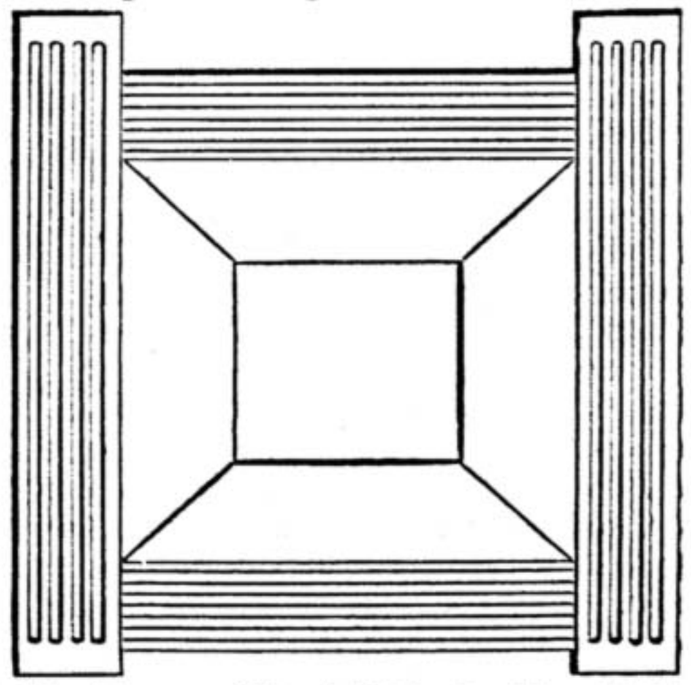


Fig. 16.—Frame of Reeded Wood without Mitres.

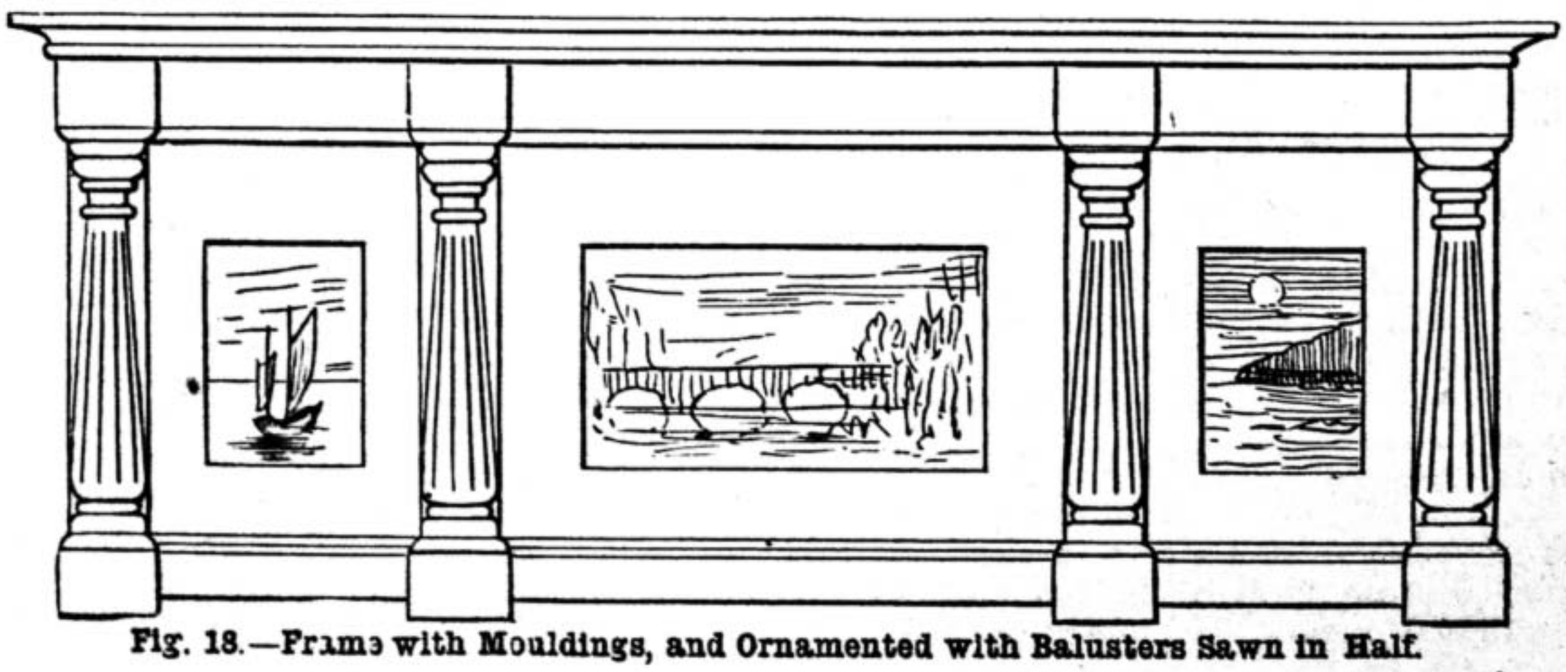


Fig. 18.—Frame with Mouldings, and Ornamented with Balusters Sawn in Half.

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

the acting partner doing his share, and the brain partner — ironically known as the sleeping one—doing his part, in the success of the whole. But with one of Melhuish's mitre-cutting machines, and set of cramps—costing less than a sovereign—the mystery of the art vanishes, and the most bungling of amateurs may equal a trained workman in the exquisite neatness of his angle joints.

A suggestion for a triple frame (Fig. 8) in simple joinery and fret work is given, under protest. If done simply and without undue fussiness it might look well; it is certainly in sympathy with the very popular so-called Early English of to-day (why so-called is a mystery too deep for probing). If worked in black and gold, or all black, it would balance the overmantel in a small room, or harmonise with the art furniture of the period, but I confess I love it not myself, although, so far as I know, it is my own suggestion.

The style of Fig. 9, also new (I believe), I must confess to liking, believing that the idea it embodies is both novel and workable, and in many variations calculated to make a pleasant bit of wall decoration, yet in no way to the detriment of the picture it encases. I should prefer it entirely gilded, but with the oak fret work strips and the flat oak mount gilded, and the framework finished in black, it might look well and please many people better. When I use the term gilded I do not mean the ordinary gold leaf, but bronze powder, applied easily by any amateur, for all to be done is first to paint over the surface with gold size, and when it is nearly dry—tacky is the technical term—powdering the gold on to it with a dabber of cotton wool. The said bronze can be had in a hundred shades of colour, is not expensive, yet extremely good in effect. The cheap bronzes look equally well at first, but for lasting work only the best should be chosen. There is a pale green-gold very pretty, also a deep copper-red, that in each case helps to break away from the monotony of the ever-present (except in our pockets) yellow-gold.

The sketch (Fig. 10) is a rough note from memory of the frames adopted by Mr. Menpes. These, however, merit fuller description.

Fig. 11 shows the section of the outer frame, a piece of simple dovetailed joinery, exactly like the carcase of a box or a drawer; this encloses a panel probably grooved into its place, like a drawer bottom, for instance. The hole for the picture is bordered by a beading also of plain square wood, the glass being either rabbeted into this or fixed with tiny wood beads. It will be noticed that the proportions of the frame are entirely distinct from European ones, and vary greatly. But roughly, it may be said, the sides are narrow, the top somewhat broader, but not so wide (or deep, call it which you will) at the bottom. The panel may be either of grooved wood—a wood panel with simple square grooves running vertically—or else covered with silk or brocade. The *whole* of the framing is gilded with the same shade of gold, and the effect is most sumptuous. The grooves should, I think, be nearer together than in the sketch, giving almost a corrugated iron effect (but not rounded projections and depressions); but this detail may be left to the operator. The round spot is a tiny speck of brilliant scarlet let in, as it were, bearing the monogram of Mr. Menpes, the well-known Japanese design on all his later work.

Not knowing whether or not these frames are "registered" designs, I must explain that the above is merely a description of the manner in which they appeared to be made, and that those who copy do so at their own risk. There was no warning, either in the catalogue or the exhibition, of the frames being protected against imitations.

In Fig. 17 is sketched a frame much used of late, but hardly within the amateur's power to finish; it is made of saw-cut wood, rough as it leaves the saw-pit, gilded with gold leaf, and adorned by a moulding of rich ornamental design around its opening for the picture. The surface of the wood should slope outwards—that is, the inside edge should be thicker than the outside. In spite of a little affectation of simplicity and luxury mixed, the broken surface of the gilded wood is very gorgeous, and admirably adapted to its purpose.

In Fig. 16 a suggestion for using reeded wood, without mitres, is given; this is as yet rarely adopted, but might be well worth trial, in the right proportions; it would be fairly dignified and individual in its expression, without the air of straining after mere bizarre novelty, from which some of those described are scarcely free.

In the diagram (Fig. 18), a simple frame, with mouldings, and the ends of two of the ordinary turned balusters, procurable for a few pence each, makes much effect at small cost. The round turned work is sawn in half and applied pilaster fashion to the skeleton framework. For an overmantel to a small room, or the wall above a piano, or a sideboard, this might look well, and be found perfectly manageable. In Fig. 12 a variation is shown, suggested by the "Menpes" frames, Japanese leather paper covering the panel, the frame itself being gilded to the exact shade to match, or, if that is not possible, the whole repowdered with bronze to be in harmony. These frames look so extremely well in actual use, that in spite of the crudeness of the sketches, which, roughly drawn and colourless, are lacking in charm, it is as well to reiterate the advice to make them. They also look exceedingly nice with white moulding, and a low monochrome paper, or white brocaded silk in place of gold; photographs or etchings might be framed in this fashion, but a gold frame would probably be too sumptuous and overweigh a monochrome picture, killing it entirely.

Fig. 13 shows a corner of some frames of Japanese manufacture. These were mere frames, with no inner panel, but just a white cardboard French mount for the etching; the moulding was inlaid (veneer) in black and white chequer pattern.

In Fig. 14 will be seen a frame used by Mr. Whistler; it is of a wood moulding, the section (Fig. 15) painted white, and striped with lines hand-painted in neutral tint, all going vertically as indicated; this also had a white cardboard mount. The mouldings of these last frames were about ¾ of an inch wide, certainly not more.

In concluding, it may be said that what the taste of generations has approved is more likely to be of value than a passing fashion, and that the conventional frame of old days needs little change. This is certainly true, yet there are divers kinds even of good pictures, and some are not in themselves decorative in their effect, neither do the old-style frames harmonise so happily with the bric-à-brac of a modern room. This last reason is probably the chief one for these suggestions, and may serve as long as the present taste in house decoration holds sway, to render the modern frame in some of its hundred-and-one varieties more desirable to its owners.

A point too sordid for dwelling upon at length need not be entirely overlooked. An attractive frame *does* draw attention to a picture, more particularly at an Exhibition; and since an artist must sell his pictures to live, he will not despise any harmless advertisement that brings his works to notice among the crowd of those that wait to be admired. Art disdains Commerce in theory, but in practical every-day life is as much swayed by the mighty £. s. d. as other things. Where a question of morals or truth is involved it is beyond question the nobler course to disdain novelty if it conflicts with either; but when the issue is but a question of taste, the rule may be less stringent; and even in so small a matter as the framing of a picture, some concession may be made to the passing fashion of the day, with no loss to the dignity of the artist, or the progress of education in art matters among the people. So, granting that the theme of this paper deals with ephemeral trivialities; yet are we *all* immortals, leaving work not for an age but for all time! As a poet has expressed himself in the envoy to his book—

> "There you and I at last will have to go,
> And if this book prevene us there or no,
> 'Tis but the difference of a year or twain
> If we or it find earlier sleep below;"*

so we may enjoy innocent trifles, in spite of the lofty scorn of severely "thorough" people.

HINGES:

THEIR VARIETIES AND APPLICATION.

BY D. ADAMSON.

I.—The Butt Hinge—How to Hinge and Hang a Door.

Among the difficulties which beset the amateur worker, or even the young workman, those of a minor character are often those upon which he is most likely to stumble. Whether it is that he does not regard little details till he actually wishes to put them in practice, or whether it is because technical writers consider it beneath them to write on elementary work, the fact remains that the amateur artisan is often at a loss how to proceed with some small matter which, to those trained in the ordinary workshop, seems to come as a matter of course. Writers on technical subjects freely discourse on out-of-the-way methods, but they very naturally assume that it is no use going into minute details of simple work. It is on this point that purely technical journals, valuable as they are to the professional worker, are of little assistance to the amateur; and it is just here that Work steps in and supplies the want. Were it not so, I should hesitate to offer any remarks on hinges, but as I have derived many a valuable suggestion from amateurs, not only in connection with "hobbies," but immediately concerning my own business, I venture to give a few hints which, however crude they may be, will possibly prove of service to novices in the wood-working handicraft.

The remark was once made to me, when I asked a question about the rules by which hinge fitting is done, that the only rule is to be guided by common sense. This might be sufficient for those who have already a general knowledge of the various kinds of hinges, and have acquired an almost intuitive perception how to act in any ordinary circumstances, but in my case it was somewhat equivalent to telling a man, who does not know the alphabet, that if he can't

* "On Viol and Flute." Edmund Gosse.

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

read he must spell the words. Since then, however, by keeping my eyes open, which, by the way, is not a bad plan to acquire knowledge, I have noted a few matters in connection with hinges which, in the absence of positive rules, may be of interest and save the amateur a more or less wearisome journey over the road of experience. A satisfactory path to have travelled, and one to be looked back on with respect; not, however, unattended by mishaps and delays which, perhaps, others may be enabled in some degree to avoid by the following hints. They are offered with diffidence, though so far as they go they are correct; and if the matter be stale to some, doubtless it will be new to others, and for the sake of these I write. This will explain any omissions, and also the elementary character of the hints.

It might prove an interesting task to trace the hinge from early ages, when some rude savage, an inventive genius though in his way, first applied the principle of the hinge by connecting two boards with a flexible joint—whether of raw hide or twisted fibre, who shall say?—to the ornate metal work of later times, and onward to the more serviceable if more prosaic contrivances of the present day. It is with these latter that we have to do; and, however pleasant from an antiquarian point of view it might be to dwell on the older forms, doing so could assist the worker little. We may be pretty well certain that, apart from mere ornamental variety, no useful form has been allowed to lapse; although, as in other directions, fashion exercises a powerful influence, and some hinges are no longer in such demand as they were. The tendency at the present day seems to be towards simplicity, and if one may venture to express an opinion on the subject, it is a move in the right direction, for surely there is no occasion to multiply work, unless there is something more than a fancied advantage to be gained by doing so.

Of course, I am now referring specially to hinges, and, as an instance, I may take the cranked centre hinge. This form, which was fastened at the top and bottom of, say, a wardrobe door, is no longer in such general use as it was only a few years ago. It has been superseded by the "butt hinge." This, in cabinet work, is *the* hinge, and, indeed, it may be taken as the typical form, or, at any rate, of that class which I think has somewhere been described as the "double jointed edge hinge." Under its technical name of "butt," it may not be known by the uninitiated, who will, however, have no difficulty in recognising it as the ordinary door hinge, as shown in Fig. 1. The general construction can so readily be perceived by any one who will take the trouble to look at a hinge that a tedious verbal description may be omitted. Suffice it to say, that it consists of two flaps connected by a wire, on which they are moveable to a certain degree. The side shown in Fig. 1 is known as the front, the reverse as the back. By back, however, is often understood only the rounded part, which is visible when the hinge is fixed and the door, or whatever it may be attached to, is shut. In the finer qualities of hinges, the "backs" are often polished and lacquered; the fronts also may be finished in the same way. Beyond this, it is hardly necessary to refer to quality, which varies considerably, both in weight of metal and general style. Roughly speaking, a good hinge is one in which the parts work smoothly against each other without twisting or straining.

It may be of interest to note that the joint of a hinge is usually unequally divided; for example, in Fig. 2, where the two flaps are shown apart, one of them has two projections, and the other only one. However many of these there may be, it will generally be found that one side has an even number of them, and the other an uneven; thus, two and three, the total consequently being an odd number. The side with the even joint pieces, however many there may be, is technically called the "double," and the other the "single." I have said hinges are made so usually, for the custom is not invariable, as in some, each side has the same number; but, with the exception of "lift off" hinges, where the reason is obvious, so far as my observation goes, such are generally of a lower quality; not perhaps sufficiently poor to warrant their rejection, but enough to justify the hint. Mind, I only say what I have noticed myself, for I do not pretend to have been a specially critical observer of hinges, and there may be good makes in which the usual custom is departed from.

Now with this preliminary talk about the "butt" let us see how a door is to be hung by it. The easiest way would be to screw the hinge to the outside, but such a mode of procedure would at once proclaim the novice. It would do for rough-and-ready work, but we aim at something more than that, and the butt hinge lends itself easily to neater manipulation. First of all let us take an instance where the door is hung *within* the ends, as in Fig. 3. The door ought to fill the whole of the opening, so that it is evident a space must be cut into which the hinge can be sunk. Must this recess be made in the door or in the end? To get an answer to this satisfactorily let us use a little of the "common sense" referred to a page or so back, for it will generally be found that where one method is almost universally adopted to the exclusion of another by skilled artisans there is some good reason for the preference. A moment's consideration shows us that, in such a case as the one before us, it will be a far simpler operation to let the hinge into the door than into the end, and recognising this we have the answer to the question.

A similar mode of reasoning will get us over the next question that may arise—viz., whether the hinge is fastened to the door or the end first, for it will hardly require a practical trial to convince any one that it is easier to screw the hinge first to the door, and then to fit this in its place. To do this in a workmanlike manner a marking gauge or similar contrivance should be used. With an ordinary butt the gauge is set from the pin in the joint of the hinge to the edge of the flaps, or, expressed otherwise, the distance between the marking point and the block of the gauge is equal to half the width of the hinge when opened out flat. This is then to be gauged on the edge of the door from its front, which will give the width of the recess for the hinge. Its length is easily arrived at by marking direct from the hinge, but it will be as well not to trust to this entirely, or if so to take care that the centre of the knuckle—the pin—of the hinge is exactly true with the edge of the door. Were one hinge of a long door to be inclined in a contrary direction to the other, instead of both being parallel with the edge, there would be an undue strain, and perfect action could not be expected. All risk on this score, however, may be avoided by the use of the square to mark off the ends of the hinges. The space thus marked out should now be cut away to a sufficient depth to allow the closed hinge to be laid in it so that no part of the flap is above the level of the wood. In actual practice it is customary to cut away the wood a little deeper towards the back than at the front, or where the joint of the hinge is. This, it will be understood, though flush on the end of the door, projects a little in front. The only reason for letting the hinge in deeper at the back is to provide against any accidental projection of a screw head above the hinge plate, which would prevent the hinge folding close.

The next thing is to screw the hinges to the doors, using screws of such a size that their heads can be properly sunk in the holes prepared for them. It will save a good deal of time to knock the screws in with a hammer for a short distance, not sufficiently to drive them home, but merely till they are far enough in to allow the screwdriver to be used without causing them to "wobble."

When the hinges have been firmly fixed, the hanging of the door may be proceeded with. In the case of large doors this is a somewhat troublesome operation, but in small work it only requires a little care. The method is the same, or may be, though later on a slight difference will be named applicable to large doors, though not absolutely necessary. Open the hinges out, and place the door against the ends in the position it is to occupy when the work is completed, holding it partly open, in order that the loose hinge plate may be got at. As a rule, doors in cabinet work are set back a little within the ends, an eighth to a quarter of an inch, according to the size of the article, but there is no practical necessity for this being done. The only reason is that it looks better, and as one way is as easy as the other that which appeals most to the eye may as well be chosen, for it is the attention to such apparently trivial matters that often makes the distinction between good and careless workmanship. As the door when fixed ought to open and shut freely without scraping against the bottom, the necessary space must be left between the two parts. This should not be great in a well-fitting door, and a sheet of glass paper or thin veneer will come in handy. Place anything of this sort on the bottom, and let the door rest on it. The top of the door may be left to take care of itself, for it can be eased off if it fits too close, and till the actual fitting up is all but done it is as well for it to fit tightly. The thickness of the paper which is between the door and the bottom will be sufficient space for them to clear each other. It is seldom that a door has only one hinge. Bore a hole for one screw through the top hinge, especially if the door is a long one, and drive the screw in. This will afford temporary support, and allow of adjustment of the door, which can be regulated till it hangs truly. Then fasten the other hinge or, in the case of more than two, the bottom one with another screw. The door may now be opened and shut, and if it can be moved properly the remaining screws may be driven in.

It may be wondered why only one screw is recommended before all are bored for or fixed, as it might seem simpler to finish off with each hinge before proceeding with another. If so I may explain that the reason as given to me by an experienced cabinet maker is that, in the event of a misfit, when the door is actually swung, one screw is more easily removed than a greater number, and that the bite of the screws is

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

not weakened by unnecessary holes or enlargements of holes which may be required if the position of the door, or rather the hinge, has to be shifted a trifle. One hole to a hinge being a little bit out does not

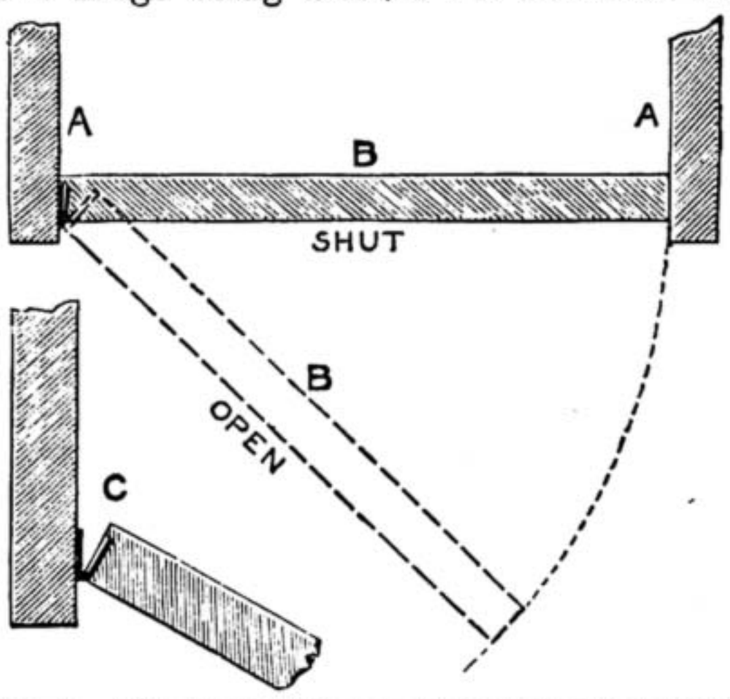


Fig. 3.—Diagram showing Door Hinged within Ends. A, A, Ends; B, Door; C, Enlarged View.

signify, as the other screws will hold well enough, and they can be fitted with certainty. We amateurs can learn a good deal from the professional worker in our favourite recreations, though some of us who have succeeded

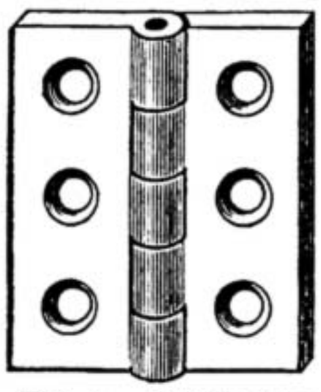


Fig. 1.—Butt Hinge.

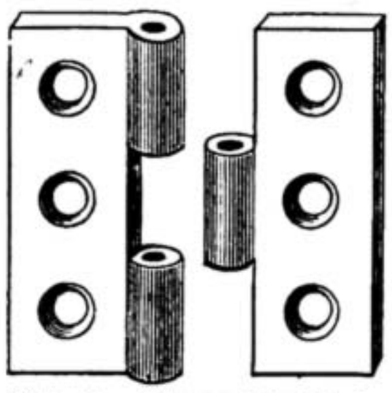


Fig. 2.—Hinge Divided.

in making a box or some equally complicated structure with its corners not so very much out of the square, and its dovetails easy—yes, that's better than badly—fitting, are perhaps rather apt to pride ourselves on our skill as being of quite a superior order. This, however, by the way; and having now given a few hints on one mode of fixing butts, I hope to treat of others, with remarks on varieties of hinges, in a future article.

(*To be continued.*)

BORING SMALL CYLINDERS.

BY OLLA PODRIDA.

I.—CHUCKING AND BORING IN SELF-ACTING TRAVERSING LATHE WITH SLIDE REST—HAND TOOLS, ETC., IN ORDINARY LATHE WITH T RESTS — MAKESHIFT FOR BORING WITHOUT LATHE.

To those possessing a lathe with traversing, or self-acting, motion, or even a good slide rest, the boring of a small or moderate-sized cylinder presents little difficulty; but in carrying out work of this nature in a common lathe provided with T rests only it becomes much more troublesome to produce a satisfactory result, owing to the necessity for special tools—such as D bits, broaches or rose bits, or parallel drills wherewith to finish the required bore, the preparation of which means an expenditure of time, labour, and material, the last-named being in many cases a serious bar in itself.

The immediate object of this paper is contained in the illustrations herewith, which represent a cheap and efficient makeshift wherewith such work of the smaller class may be successfully grappled with. Before proceeding with the description of this particular means, a few remarks, explanatory of the procedure followed under the conditions referred to in the opening clauses of this article, may be of assistance to those who may happen to lack the necessary practical experience.

Taking the first case—viz., a good self-acting lathe, fitted with a proper four-jawed expanding chuck of suitable size — then, under such favourable conditions the operation becomes a simple and easy one. First, the cylinder is set truly and gripped firmly by the back or bottom flange, it being important that the front or top flange which receives the cover carrying piston-rod stuffing-box shall be faced before shifting the cylinder after boring. This remark applies to all cases of facing and boring where truth is indispensable. If possible, sufficient clearance should be contrived for between the back flange and face of chuck or dogs, so that a hook tool may be used for partly facing this one also before removal; this will be found very handy in resetting the cylinder when turned end for end to finish the flange. In boring, an ordinary hook tool may be employed, or a cutter bar, but in either case they should be very strong and stiff, to guard against "chattering." In the case of a small cylinder, and in the absence of a four-jawed expanding chuck, a suitable bell chuck may be advantageously used.

With reference to the second case, where the boring has to be carried out in a common lathe provided only with T rests, it becomes a more difficult matter. D bits, broaches or rose bits, or drills, have to be specially prepared in accordance with the bore required, and this has to be done beforehand while the lathe is unoccupied by the cylinder. The method of procedure is as follows:—The D bits or other tools having been prepared, the cylinder is first chucked and set; then with the hand tools it is bored out to size of drill for a short distance — say one-eighth or one-quarter of an inch—so that the bit, broach, or drill may be started truly. The feed or advance of the tool is given by the poppet-head, and to facilitate this, the centres upon which the tool has been prepared must be left in. The tool may be kept from turning, under the strain of cutting, by means of a carrier or spanner, and the edges must be kept well lubricated with oil during the whole process. The rate of feed must also be, as far as possible, regular. One flange may, of course, be faced without shifting, but the other must be finished on a mandrel.

But comparatively few people possess first-class lathes replete with expanding chucks, etc., and it is not every one who can afford special bits and drills. It becomes necessary, therefore, that many cases of need must be met by makeshifts in some form or other, and this particular example may be overcome by the employment of a tool similar to that which is illustrated in Fig. 1, where it is shown in the act of boring a cylinder.

This simple but serviceable boring tool consists of a piece of hard wood—such as beech or oak—turned up truly in two sizes as shown, the larger equal to the finished bore, and the smaller to fit the rough bore as cast. Each of these sizes must accommodate the length of the cylinder. The large diameter should be rather longer, and provided with a squared end whereby it may be driven. A saw cut must be run up the centre, and a thin steel cutter fixed by screws, as shown. The thickness of this tool may be regulated by the saw cut, and the shape is given in Fig. 3. It must fit very nicely into the boring stem, so that when screwed up tight the cylindricity of the stem is not affected. Clearance, as shown at c, c, Fig. 2, must be cut along the small part to allow the borings to fall away and prevent jamming in working.

The tool may be actuated by means of a wooden cross handle fitted on the square, the motive power being supplied by hand, and the feed given by means of a suitable weight laid on the handle. The cylinder under operation may be held in a vice, or otherwise secured, provided always that there is room for the end of the tool to clear through the bottom. After boring, the flanges must be faced on a mandrel. It is advisable to smooth the rough bore, as it comes from the

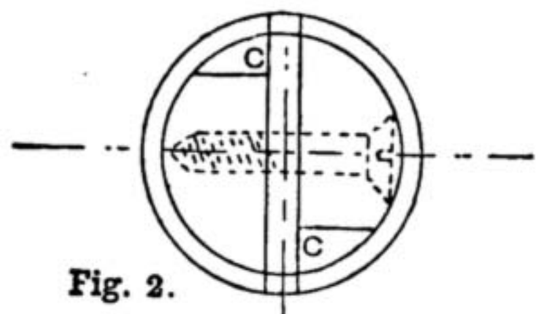


Fig. 2.

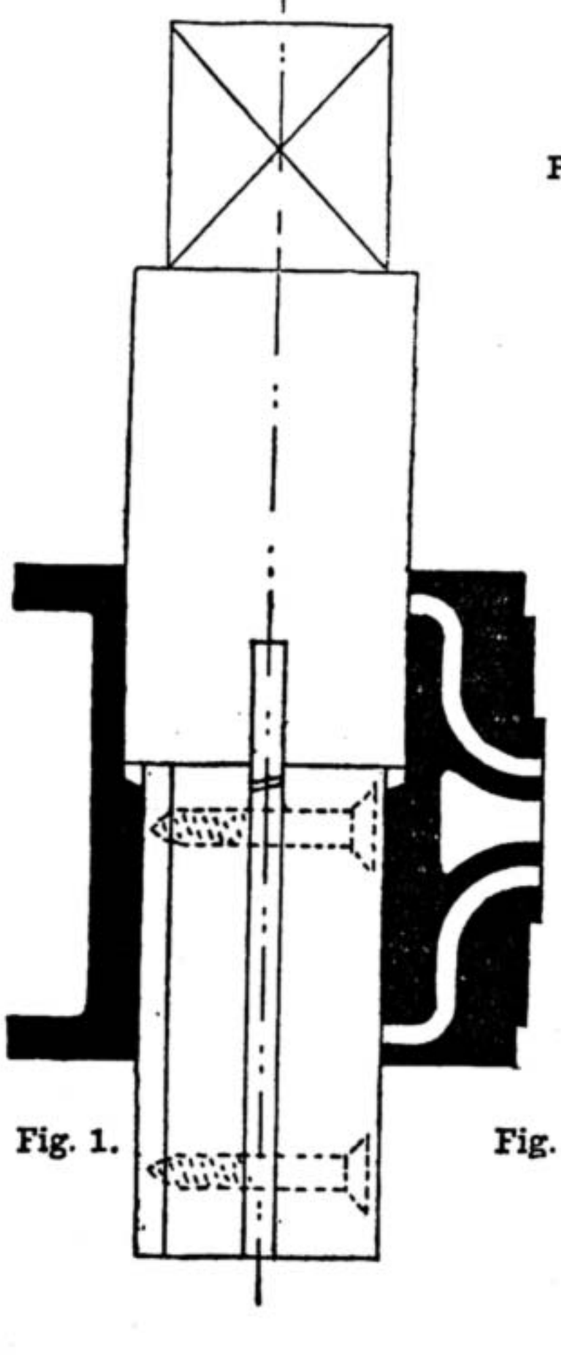


Fig. 1.

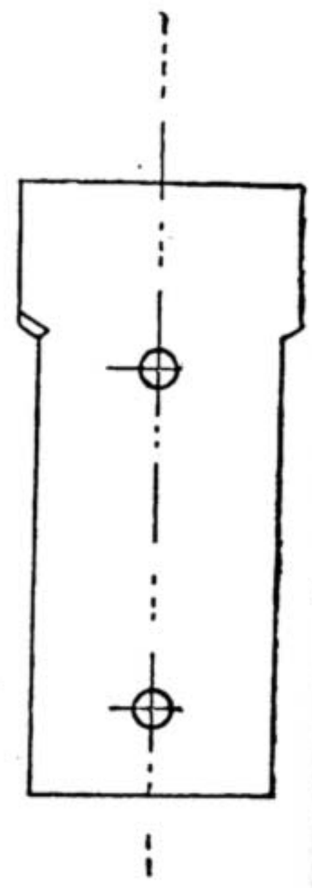


Fig. 3.

Fig. 1.—Tool in Position in act of Boring Cylinder. Fig. 2.—Sectional Diagram showing Mode of Effecting Clearance. Fig. 3.—Shape of Boring Tool.

foundry, with a round file, so as to give the tool as much fair play as possible.

A very decent bore can be obtained at one cut, but to ensure accuracy, two operations with different-sized tools are necessary. Having successfully bored new, and re-bored old, cylinders by this method, I hope that a similar result may occur to all who feel the need of such a contrivance. In another paper a simple way of boring cylinders in a self-acting lathe with a saddle will be described, a process attended with many advantages.

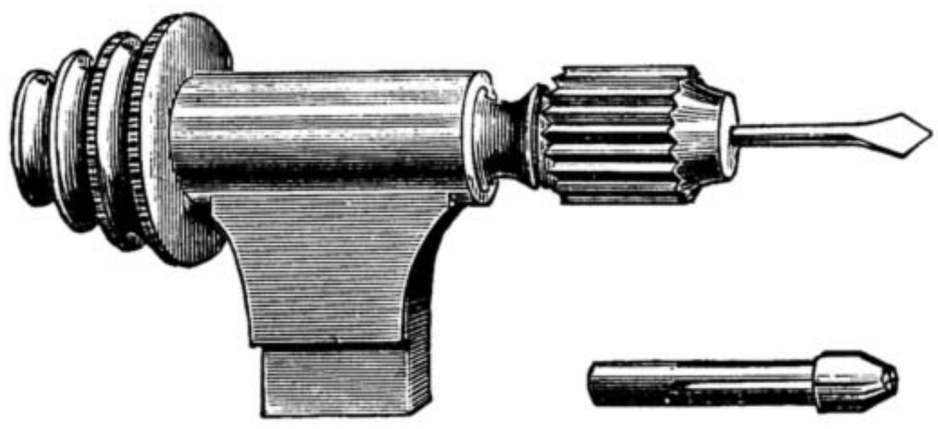
(*To be continued.*)

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

OUR GUIDE TO GOOD THINGS.

24.—Handy Drill for Small Work.

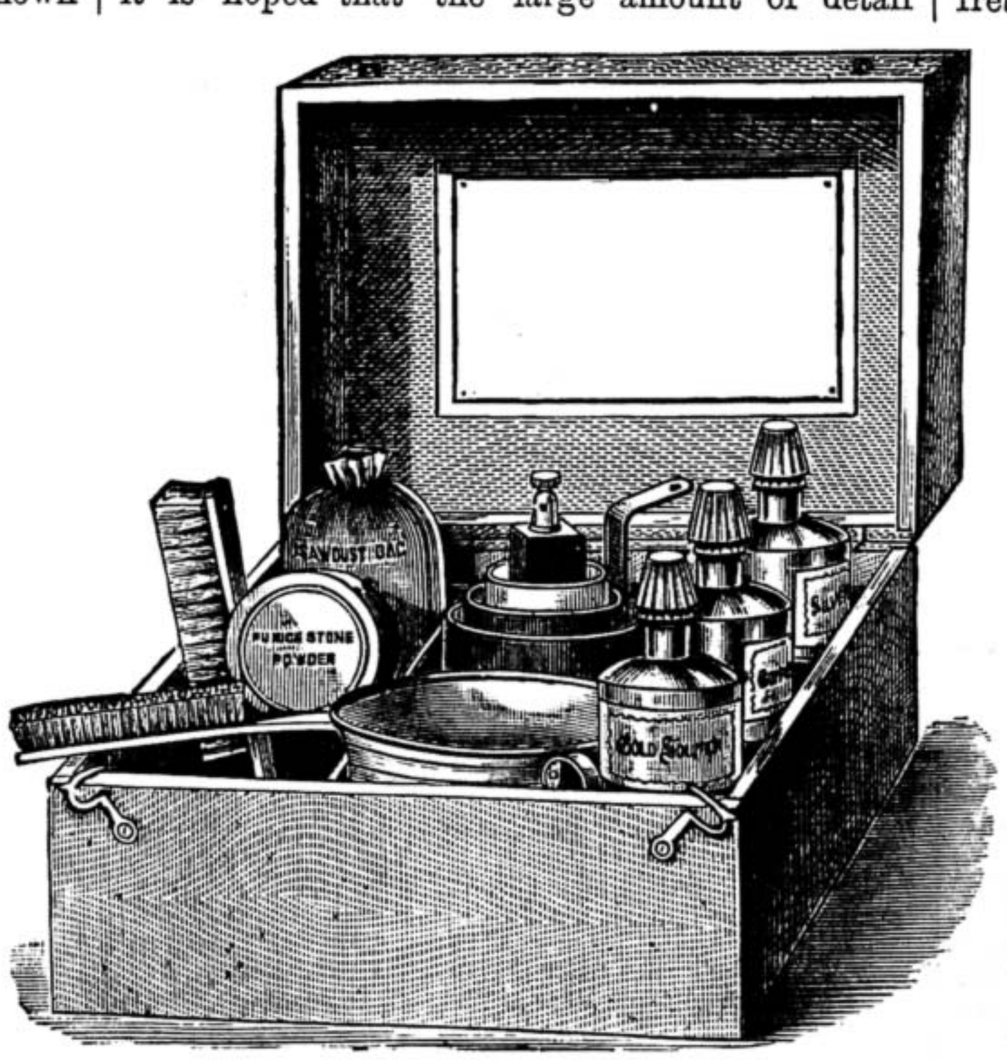
The drill that is represented in the annexed illustration will commend itself to the readers of Work as being an appliance that is admirably adapted for small work, in doing which it would be inconvenient to use a drill of a larger size or of a different kind. The drill itself (by which I mean the entire part of the apparatus that is set in motion, and not the drill point) passes through a steel tube, which is fitted with a foot rebated, so to speak, for ⅜ in. from the bottom, by which it is grasped and held in a vice while the operation of drilling is being carried out. On one end of the shaft that passes through this tube is placed a pulley with three speeds, by which the drill is actuated by means of a bow, the string of which is passed round the groove that it is considered most desirable to use. The other end of the shank is hollow internally—a piece of iron tubing cut longitudinally through the greater part of its length into three jaws which hold the drill. A cap (surrounded with a band projecting slightly, and deeply grooved to render the operation of screwing and unscrewing it all the more easy) is used to tighten the jaws on the drill, and hold it fixed immovably. Internally the cap is cut with a screw thread, by which it is screwed on to the end of the shank from which the drill projects. Each drill is furnished with two sets of jaws for holding larger and smaller drill points; the drill points themselves ranging from a very small size to ¼ in., which, I am inclined to think, is about the largest that could be used with good effect in this appliance. It will be found useful in many trades in which small drills are required, and it will be highly prized as an addition to his ever-increasing stock of tools by the amateur. The specimen which I have described was shown me by Messrs. R. Melhuish and Sons, 85 and 87, Fetter Lane, London, E.C. Its price, as shown in the illustration, is 5s. I should say that the length of the drill, exclusive of the drill point, is 3⅛ in., its depth 1½ in., and the diameter of the speeds ¾ in., ⅝ in., and ½ in. respectively.



Handy Steel Drill for Small Work.

25.—The Practical Electro-plating and Gilding Outfit.

I am glad that it has been put in my power, at last, to call attention to something that is entirely different to the lathes, tools, and appliances that have hitherto been the subjects of notice. With regard to these, let me remind my readers, I have but little, if any, choice; for it is simply my duty to bring under their notice anything that is sent me, that appears likely to be useful and, therefore, worthy of mention. I trust that all inventors, manufacturers, and dealers will understand that "Our Guide to Good Things" is open to all alike for a description of their specialities, and that in order to obtain a notice, they have only to put themselves in communication with me, supplying me with some account of the object to which they desire attention to be called, if the article be too large to be sent to La Belle Sauvage for examination. The Practical Electro-Plating and Gilding Outfit, of which an engraving is given in this page, consists of a Bunsen battery, enamelled depositing cup, scratch brush, washing-out brush, boxwood sawdust, powdered pumice, copper wires, copper solution, silver solution, and gold solution, all contained in a neat polished case, or wooden box, as represented. With each outfit instructions are supplied, showing its possessor how to charge the battery in the first place, and then how to manage the plating process with copper, silver, or gold. Some practical hints which are concise, and apparently to the purpose, are further given to instruct the beginner in the management of the battery. I say "beginner" purposely, for it is only to such that the outfit really appeals; for those who are inclined to go into the work of electro-plating and gilding thoroughly would require plant on a more extended scale. I am the more inclined to think well of it, because one of my numerous correspondents wrote to me the other day to call my attention to it, and he spoke of it as being likely to be useful to many. If any reader tries it, I shall be glad if he will send me his opinion of it. Its price, complete, is 24s. No maker's name is attached to the instructions sent out with the outfit, but I believe it may be purchased of ironmongers and dealers in tools, and, probably, of chemists, who now deal largely in photographic appliances and goods of this sort.



Practical Electro-Plating and Gilding Outfit.

26.—"Ornamental Turning."

No turner, whether professional or amateur, who can afford to give a guinea for a book, should be without the very handsome volume entitled, "Ornamental Turning," a work of practical instruction in the above art, which has been produced and published by Mr. J. H. Evans, 159, Wardour Street, W., who is an authority on the subject, and a proficient in the beautiful work that he so ably describes. The work, to use the author's own words, has been "introduced with a view to assist amateurs who are interested in the development of the resources connected with this most interesting and scientific amusement; and it is hoped that the large amount of detail displayed will facilitate the manipulation of the various instruments and apparatus described." Mr. Evans enters at once on the subject of decorative turning, because plain turning has met with treatment by so many writers, that he deems it to be neither necessary or desirable to touch on it, so he commences immediately with a description of the ornamental turning lathe, the overhead motion, and the appliances that are used in connection with it; and the mode of chucking and adjustment of work, tools, chucks, etc., the division plate and index, the height and centre of the tools, and how to grind them and set them. From this, he passes on to the consideration of the different materials most appropriate to the work, and the mode of polishing, and the use of lacquers. Next, he brings under the reader's notice the numerous and various apparatus used in connection with the ornamental turning lathe, including the overhead motion, the sliding rest and its tools, the eccentric, vertical, horizontal, and universal cutters, the drilling instrument and curvilinear apparatus, the eccentric, ellipse, rectilinear, and dome or spherical chucks, the spiral apparatus and spherical slide rest, geometrical slide rest, and various cutters. Descriptions are also given of the modes of producing various elaborate pieces of turned work, including elliptic caskets, ivory candelabra, vases, frames, etc.; and the author concludes with a chapter on the advantages derived from electrotyping in intaglio and kindred work. The book is illustrated with numerous diagrams and illustrations of the ornamental lathe, and the apparatus used with it: and seventeen full-page autotype plates, exhibiting beautifully executed examples of the various kinds of work that may be executed by the aid of these appliances. I have sought, rather, to give the reader some idea of what he will find in the book itself than to select isolated portions for particular notice and comment; because I think that the former mode of treatment is more truly useful than the latter. Space has prevented me from doing anything like justice to Mr. Evans's work, and whoever becomes the owner of a copy will be agreeably surprised to find how much I have left untouched.

27.—Patterns for Fret Work, Stencilling, Turning, etc.

Amateurs and young workmen who are on the look-out for patterns of this kind will find much that is useful and suggestive in the parcels of these designs that are prepared and sent out by Mr. Fritz Collins, publisher of designs, Summerlays Place, Bath. They include examples for fret work, stencilling, turning, and even repoussé work, and the purchaser must be hard to please who cannot get out of them sufficient to remunerate him for the outlay of the shilling that is asked for each separate packet. Buyers must not expect to obtain highly-finished printed examples, because the patterns are all stencils, executed by Mr. Collins himself, and those in his employ; and, therefore, they present a certain degree of roughness, and, perhaps, unevenness of colour, that at first may prove somewhat disappointing. The forms given, however, are good; and the stencil patterns, especially, are useful for combinations, which any one can make for himself by the exercise of a little judgment. Mr. Collins also supplies all tools, materials, and appliances required in fret working, a detailed catalogue of which may be obtained for 3d.

28.—Trying Square for Metal Work.

In metal working it is always desirable to have means of testing its accuracy in a manner that will admit of no mistake, and will not allow any error to be allowed to pass undetected. For all rectangular work, and even for testing surfaces of no great extent, an excellent little Trying Square or T Square has been recently introduced, which is most accurately machined and may be declared infallible. It consists of a gun-metal bar nearly 4 in. long, ½ in. wide, and about ¼ in. thick, being wider towards one end than at the other. A slot is cut in this projection about ¾ in. long by ⅜ in. wide, and the metal at the top and bottom of this slot is perforated to admit of a steel bar which works up and down at right angles to the gun-metal bar. The steel bar is held immovably fixed at the will of the operator by a set screw with a milled head, which presses against a spring set lengthways in the slot in the gun-metal bar. This handy appliance, which was shown me by Messrs. Melhuish & Sons, costs 2s. 6d. The Editor.

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

SHOP:

A CORNER FOR THOSE WHO WANT TO TALK IT.

*** *All Communications will be acknowledged, but Answers cannot be given to questions which do not bear on subjects that fairly come within the scope of the Magazine.*

Delay in Replies to Queries.—Correspondents must not think that their queries have been put on one side because they are not immediately answered. MR. BONNEY writes in reference to a question on electrical matters propounded by a correspondent:—"The query sent me from A. G. is of greater import than appears on the surface, and necessitates some experimental calculations which will take time to conclude. I have to decide upon the 'greatest weight' capable of being lifted with two cells, and the form of magnet best calculated to develop the full powers obtainable from two cells. I am anxious to give correct answers to all such queries, so as to make WORK a reliable source of information. Knowing this, you will kindly excuse a little delay."

Choice of a Trade.—EXCELSIOR.—Your query is a little out of the beaten track, but I do not like to refuse to answer it on that account. You are now, you say, a warehouseman in a tea establishment, aged twenty-five, in which you find there is no chance of obtaining a better position. The weekly earnings of some of your friends, who are mechanics, are considerably above the sum that you yourself receive, and you wish to qualify yourself for some trade. Your hours are from 8 a.m. to 7.20 p.m., which does not leave you much time. You ask me to recommend you "any trade in which by private study and class work at, say, a Technical College," you could fit yourself to earn a living. You should first ask yourself what trade you feel most inclined to adopt. If I were in your place my own tastes would lead me to take up with carpentry, joinery, cabinet making, or wood carving, and as a preliminary step in this direction, go and see Mr. Thomas Syer, who has, or had, a Technical School of his own at 1 and 2, Finsbury Square Buildings, Chiswell Street, E.C.

Leaded Glass Windows.—N. W. (Kilburn).—This subject, with Glass Painting, will be treated effectually in WORK, and in the papers that will appear on this subject you will be told where to obtain the necessary tools and materials. You may rest assured that all articles in WORK that can be illustrated will be illustrated as fully and as completely as possible.

Ladies' Glove and Handkerchief Boxes.—You tell me that you want designs for these "in oak with monogram L.K. carved on the lid." For the benefit of such amateur carpenters as yourself, illustrated papers giving designs for and instructions in making such articles as these, and others of a similar kind, shall be given from time to time in WORK. It would occupy too much space to give what you require in "Shop."

Advertisements in "Work."—G. B. (Tadcaster).—Without doubt WORK will be found in every way worthy of binding and preserving. It is not in any way an easy matter to regulate the advertisements as you wish and suggest. If it were possible to do so I can assure you it would be done. Thank you for your good wishes.

Patent Brass-Capped Bradawl.—C. C. E. writes:—"As to the Patent Brass-capped Bradawl, I made one fifteen years ago, and have it now, so there is not so much 'patent' to hold good." [It is a simple contrivance to be sure, but none the less useful and effectual because simple. You must have been aware, when you made the capped bradawl that you now have, that it was much superior to the ordinary bradawl, and as you did not take advantage of your discovery, or invention, call it what you will, the rights of the patentee of the bradawls thus made and now on sale must hold good.—ED.]

Lukin Lathe.—C. C. E.—Your remarks, which I perfectly understand and appreciate, shall be submitted to the designer and manufacturer of the lathe in question.

Picture-Frame Making.—MITRE.—This trade, with carving and gilding, will be fully treated in due season in WORK. In the meantime, you might apply for what you require to Mr. George Rees, 41, Russell Street, Covent Garden, and the Savoy, Strand. I am not acquainted myself with any special work on the subject.

Boatbuilding.—L. W. L. (Wolverhampton).—This subject will be taken up and thoroughly treated; but I fear it will not be possible to do much with reference to the approaching season, which is close at hand. At present I must ask you to be satisfied with the assurance that writers will soon be at work on the theme.

Working Mother-of-Pearl.—EDWARD.—Mother-of-pearl is cut into the shapes and forms required by means of a saw, and such devices, letters, and words as you describe in your letter are also cut in this material by drills, fine saws, and files. It would require a paper or two to describe the mode of procedure clearly enough to guide you in every step, and possibly some worker in mother-of-pearl may see his way to give instructions for the benefit of yourself and others. Etching on mother-of-pearl is executed in the same way as etching on metal. If a raised device is required on the pearl, the design is first drawn upon it with an opaque varnish, and the surface unprotected by the varnish is then brushed over with strong nitric acid. The acid eats away the pearl, and when it has been sufficiently treated in this manner the varnish is removed by washing, and the design appears in relief.

Gardening.—J. P. A.—It will not be possible to give papers on gardening in WORK, as it is a subject that requires a periodical all to itself; but the appliances used in gardening and by gardeners indoors and outdoors will be described in due course. You will, I am sure, readily understand that it is not possible to take up every subject at once, but that every subject will have its turn in due season.

Suggestions for "Work."—S. (Edinburgh).—I have to thank you for your suggestions, to carry out which would take up much more space than can be spared, and require a very large editorial staff. Technical terms can be easily understood by reference to any good technical dictionary, or dictionary in which the leading technical terms are dealt with. Those who read WORK are certainly supposed to know the uses of lathes, and tools, and appliances mentioned in its pages, and very few would look for an enunciation of first principles. You can scarcely be in earnest in expecting me to explain in "Our Guide to Good Things" that a bradawl is meant for boring holes in wood for the reception of nails, and to make provision for driving them home as straightly as possible, and to point out that a wrench is used for loosening or tightening a nut. These are things, to fall back upon a very threadbare expression, which "every schoolboy knows."

New Invention.—QUINTUPLE.—No charge will be made for giving a description of your patented invention in WORK. Send in an account of it on approval.

Dyeing Osiers.—BUNSEN BATTERY.—Dyeing is chiefly resorted to for veneers, in which it is desirable that the colour should penetrate through the wood that is subjected to this process. For colouring the surface staining is generally practised. Possibly osiers or willows peeled for basket making might be stained by means of Judson's dyes, but I am not certain about this; but, perhaps, the safer plan would be to subject them to the action of dyes, treating them in the same manner as veneers. To give recipes for the preparation of all the colours you ask for, namely, "black, blue, scarlet, green, violet, yellow, and orange," would take up far more space in "Shop" than can be spared, and I can only promise you that the subject shall not be forgotten, and that a paper giving you the information you are seeking for shall appear in WORK at the earliest possible date.

Strictures on "Work."—R. S. C. (Leeds).—Hammer away as much as you like. I am used to that sort of thing, and it does not in any way hurt me. I always bear in mind the fable of "The Old Man and his Ass," and steadily decline to imitate the Old Man, and try to please everybody, because I have long since recognised the utter impossibility of doing so. No writer in No. 1 said a word more than he ought to have said, and in that same number there was not an atom of "rubbish."

Practical Soldering.—HOHENZOLLERN.—You shall have instructions on this subject very shortly, as an apt and clever writer, a thoroughly practical man, is engaged on it. In "Our Guide to Good Things," articles that are costly must be described as well as small things. I endeavour in this part of the Magazine to gather and give information that may be useful to all in turn.

Cyanotype Process.—J. W. (Darlaston).—The formula you refer to is correct, but may be misread through a comma being inaccurately placed immediately after ammonia, making it appear as if the ingredients are three. There are only two—viz., ammonia citrate of iron and ferricyanide of potassium. By using these in the manner directed, results ought to be satisfactory; but if you cannot manage, write, stating your difficulty, and I will endeavour to point out any error into which you may have fallen. An article will probably shortly be devoted to the Blue printing process. Thanks for your good wishes.

Circular-Saw Rigs for Lathe.—G. E. (Camberwell) writes:—"As a practical mechanic of twenty-five years, I have been much pleased at the way in which No. 1 of WORK is presented; but with every apology, if you will kindly allow me, I would venture on one or two suggestions in connection with circular saw. Fig. 1 represents a superfluous amount of work for small results to an amateur in the screwing or tapping a chuck to obtain a counterpart. Fig. 3 much better adapted, but the square should taper 15°; yet again, the saw which is driven between centres of 60° is the most lasting—less liable to run out of truth. As regards the table, certainly the best is that let into rest bottom—wide but shallow shoulder to allow it passing below the saw spindle—the cut in the table (supposing it to be brass ¼ in. thick) to be made by taking diameter of saw, centering the table, drilling one hole at each end, then following line of holes opening one into the other with warding file. Again, you consider lathe saw essential to amateurs. Quite so; I take it to be equally so to practical men; that is my experience.—[Comments and criticisms are always welcome, as free discussion is always helpful all round.—ED.]

*** *Many answers are held over for want of space.*

Trade Notes and Memoranda.

SOME TOPICS OF THE HOUR.—Sanitary Town Houses.—Public Baths and Laundries.—Convenient Traffic Streets.—Town Drainage.—Fashions in Joinery.—Combinations of Chimney Flues.—Preservative Processes in Architecture.—Sewage Purification by Electrolysis.—Air Pressure in Sewers.—Electric Lighting.

THE County Council's Medical Officer of Health for London is to have a salary of £1,000 per annum.—A Shakespeare window has been presented to the Stationers' Hall, London.—Patents have recently been granted for improvements in Fire-grates, the Manufacture of Cement, Window Fasteners, an Endless Band Saw, and Stone Dressing Apparatus.—The English Iron Trade is still tending upwards.—The West Ham Council want Contracts for Wrought Iron Fencing by April 23; and the Metropolitan Asylums Board invites Tenders for Engineering Work at Leavesden Asylum by April 30.—Mr. John Aird, M.P., contemplates improving the Water Supply of Vienna at a cost of two million pounds.—The completion of the Tower Bridge Scheme is extended for four years.—The Sugar Market is rising.

THE Town Council of Taunton offer premiums of £100 and £50 for the two best schemes for preventing the flooding of the north part of the town.

LIÈGE has established a commercial museum, divided into two sections. The first comprises the articles that Belgium is obliged to purchase from other countries, while the second contains samples of articles which are manufactured in Belgium.

H. GRAHAM HARRIS, M.Inst.C.E., will give four lectures on "Heat Engines other than Steam," before the Society of Arts, on May 6, 13, 20, 27.

TENDERS for Stationery and Lithography are invited by the Great Western Railway Company by 29th April; also by the Controller of Her Majesty's Stationery Office by May 1.

CAMBERWELL VESTRY will ask the County Council for £50,000 for a new road from East Dulwich to Old Kent Road.

THE buildings of the crematorium at Woking are nearly completed. The architecture is thirteenth-century Gothic, the body of the building being in red brick with Bath stone facings. The chapel is 48 ft. long by 24 ft. wide, and the height 28 ft. from the floor to the top panelling.

ON the 26th, 27th, and 28th June next an international congress on Cheap Dwellings will be held in Paris.

WORK

is published at La Belle Sauvage, Ludgate Hill, London, at 9 o'clock every Wednesday morning, and should be obtainable everywhere throughout the United Kingdom on Friday at the latest.

TERMS OF SUBSCRIPTION.

3 months, free by post	..	..	1s. 8d.
6 months, "	..	..	3s. 3d.
12 months, "	..	..	6s. 6d.

Postal Orders or Post Office Orders payable at the General Post Office, London, to CASSELL and COMPANY, Limited.

TERMS FOR THE INSERTION OF ADVERTISEMENTS IN EACH WEEKLY ISSUE.

	£	s.	d.
One Page	12	0	0
Half Page	6	10	0
Quarter Page	3	12	6
Eighth of a Page	1	17	6
One-Sixteenth of a Page	1	0	0
In Column, per inch	0	10	0

Prominent Positions, or a series of insertions, by special arrangement.

Small prepaid Advertisements, such as Situations Wanted, Exchange, etc., Twenty Words or less, One Shilling, and One Penny per Word extra if over Twenty.

*** "WORK" is sent to press fourteen days in advance of the date of issue.

Model Engine Castings, Parts, &c. Catalogue, 4d. 83 Illustrations. Screws, Nuts, Bolts, &c. List, Stamp.—BUTLER BROS., Bentham Road, South Hackney, London. [3 R

Rubber Stamps.—All who wish to make, buy, or sell. Proofs, quotations, and price lists free.—PRESTRIDGE, Manufacturer, Bristol. [1 R

Microscopes and Objects.—Slides for Exhibiting from 5s. dozen. Microscopes and all requisites. List.—HENRY EBBAGE, 344, Caledonian Road, London. [2 R

Splendid New Brass Seal for Sale, with handle, letters A. G. C. Price 5s.—SYDNEY CRICK, Festiniog Railway, Portmadoc. [1 S

"Handrailing." 6th Edition. In Three Parts, 2s. each; or all neatly bound in One Book, 7s. 6d., post free. In the most simple, plain, and easy manner for Joiners.—Address, ROBERT JONES, Author, Warrington. [2 S

Ladies and Gentlemen having spare time can earn 30s. to £2 a week with carving. Work supplied. Specimens of Carving, Set of Tools, and Instructions, 10s. 6d. Success guaranteed.—P. PITMAN, Aubrey Road, Mauldeth Road, Withington, Manchester. [3 S

Colours for Making your own Ink—Black, Red, Violet, Blue—1s. per oz. Instructions given.—ASHTON, 14, Market Place, Manchester. [4 R

Banjos, Fittings, Strings. List, stamp. Attachment for making Banjo sound like a Harp, 7d. State number of strings.—WINDER, 16 Jeffreys Street, Kentish Town Road, London. [4 S

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com

POND'S EXTRACT

THE GREAT CURATIVE

Has no equal for allaying Inflammation and Hemorrhages, Rheumatism, Gout, Hemorrhoids, Wounds, Burns, Bruises, Cuts, &c. &c.

IN USE OVER FORTY YEARS!

POND'S EXTRACT is the only Proprietary Curative that is honoured with general Royal Patronage.
We supply DIRECT the following Illustrious Personages:

HER MAJESTY THE QUEEN
OF ROUMANIA.
Her Royal Highness the Duchess of Cumberland.

Her Highness Princess of Nassau.
Her Serene Highness Princess of Wied.
His Serene Highness Prince Nicholas of Nassau.

PAMPHLET WITH MEDICAL TESTIMONIALS, &c., POST FREE ON APPLICATION.

Sold in Bottles only at 13½d., 2s. 3d., 4s. 6d., and 8s. 6d. Can be obtained of all Chemists, or of the

SOLE PROPRIETORS:

POND'S EXTRACT COMPANY, LIMITED, 64, Great Russell Street, London, W.C.

RD. MELHUISH & SONS,

FETTER LANE, LONDON, E.C.

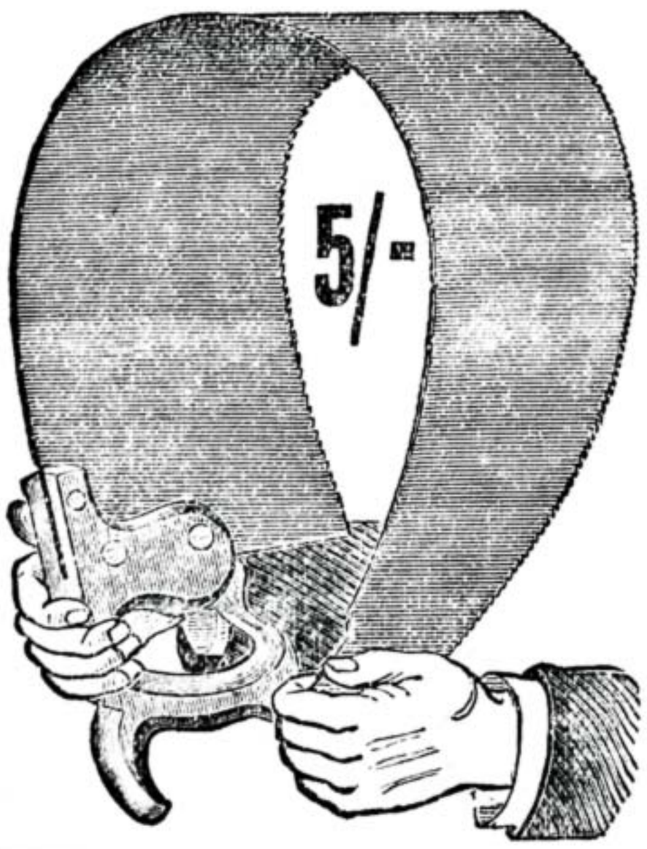
Prize Medal for excellence of

TAPS&DIES VISES TWIST-DRILLS CHUCKS MACHINE SCREWS LATHES FILES STEEL TOOLS STUBS **TOOLS**

For all Workers in Metals, also Joiners, Wood Carvers, etc.

WE HOLD THE MOST COMPLETE STOCK IN THIS COUNTRY.

CARPET STRETCHER, 1/9; do., Bent, 2/6.



Our Saws, made from Extra Cast Steel, specially for the purpose, tempered and ground by machinery, acccurately tapered from tooth to back, and from heel to point, will work easy, with least possible "sett."

OUR FAMOUS

HAND-SAWS,

As ILLUSTRATION,

16 in.	20 in.	24 in.	26 in.
3/6	4/-	4/9	5/-

BRASS BACK TENON do.

8 in.	10 in.	12 in.	14 in.
3/9	4/-	4/6	5/3

All Carriage Free.

Our Tools cannot be excelled for Price and Quality.

RD. MELHUISH & SONS,
85–87, FETTER LANE, LONDON.

MELLIN'S FOOD

For Infants and Invalids.

TRADE MARK **NOT FARINACEOUS. Rich in Flesh, Nerve, Brain, and Bone Formers.**

IT is a fact that farinaceous foods cannot be digested by Infants. This is **the only food** in which the starch has been wholly changed into **soluble substances,** which can at once be converted in the body into **living blood.** This remarkable result is attained outside the body, by imitating exactly, in the process of manufacture, the natural conditions of healthy and perfect digestion.

MELLIN'S FOOD has been examined physiologically by the highest Medical Authorities, and tested chemically by the most distinguished Analysts, and has always been classed by them A 1. It has gained many awards of the highest merit at Public Exhibitions.

No Food in the market can show such a vast collection of *bonâ-fide* testimonials, and many of these allude in an emotional yet sincere manner to the fact that **"MELLIN'S FOOD has saved Baby from Death."**

USED IN ALL CHILDREN'S HOSPITALS.

Prospectus, Pamphlet and Sample, post free on application to the ***Inventor and Manufacturer,***

G. MELLIN, Marlborough Works, Stafford St., Peckham, London, S.E.

THE AMATEUR.

A Paper for Fretworkers, Carvers, Inlayers, Wood-Painters, &c.

6d. MONTHLY.

No. 682.

Gold Medals awarded to our subscribers. Catalogue 31 to 37 of Artistic Fretwork, Carving, Inlaying, and Wood, Painting Designs, Mouldings, Cabinet Fittings, Fancy Woods, Tools (Star and Griffin's Fret Saws, Machines, Clockworks, Varnishes, Stains, Polishes, and every other requisite, with 900 Engravings, 6d. free. No. 682 Work Basket at 31. free,

HENRY ZILLES & CO.,
26 & 24, Wilson St., Finsbury, London, E.C.

PATENTS,

DESIGNS, AND TRADE MARKS.

TEL. ADDRESS: APPLICANT, London.

BERNHARD DUKES,
226, High Holborn, London, W.C.,

ATTENDS TO ALL BUSINESS RELATING TO

PATENTS, DESIGNS, and TRADE MARKS.

ATTENDANCE IN THE PROVINCES. *Please mention this Paper when applying.*

Mechanics, The Practical Dictionary of. By EDWARD H. KNIGHT. Three Vols., 2,840 pages, cloth, £3 3s. Supplementary Volume, embracing Recent Inventions and Discoveries, £1 1s.
CASSELL & COMPANY, LIMITED, *Ludgate Hill, London.*

A PURE AND PERFECT ARTICLE FOR

Teeth, Gums, & Breath.

PURILINE
REGISTERED

TOOTH-POLISH.

"PURILINE" will Purify and Beautify the Teeth with a Pearly Whiteness; Polish the Enamel; Prevent Tartar; Destroy all living Germs; and keep the mouth in a delicious condition of Comfort, Health, Purity, and Fragrance. Non-gritty and Absolutely Pure and Harmless to use.

Price One Shilling, in Handsome Enamel Box.
Of all Chemists, Perfumers, &c. Post free by

Proprietor: A. WILSON, 422, Clapham Road, London, S.W.

LENSES, SHUTTERS, TRIPODS, &c.

HUMPHRIES' CAMERAS, 1889.

THE DRAYTON.—Most compact. Every movement best workmanship. Highly finished; low price. Illustrated Lists free.—W. H. HUMPHRIES, Photographic Apparatus Manufacturer, 116, Highbury Hill, London, N. Factory, 70, Elfort Road, Drayton Park, N.

WHELPTON'S VEGETABLE PURIFYING PILLS

Are one of those pure Medicines which for their extraordinary properties have gained an almost **UNIVERSAL REPUTATION.** Recommended for Disorders of the **Head, Chest, Bowels, Liver** and **Kidneys**; also in **Rheumatism, Ulcers, Sores,** and all **Skin Diseases**—these Pills being a **direct purifier of the Blood.**

TRADE MARK (REGISTERED)

ESTABLISHED **1835.**

WHELPTON'S PILLS AND OINTMENT.

WHELPTON'S HEALING OINTMENT

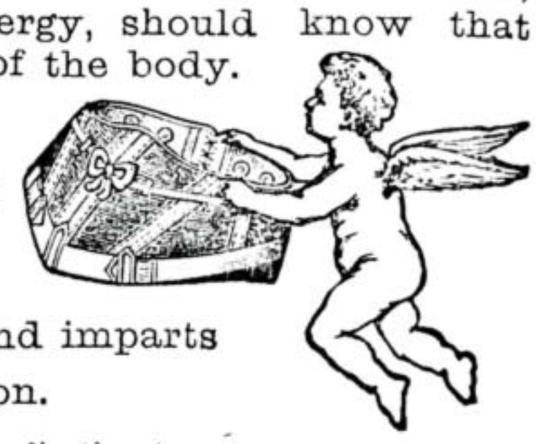
Stands unrivalled for the Cure of **Cuts, Burns, Bruises, Ulcers, Sores,** and all kinds of **Skin Diseases.** A Specific for **Eczema.** *Burns, Scalds, Cuts, etc., happen when least expected—Be Prepared!*

Both Pills and Ointment are sold in Boxes, price **7½d., 1s 1½d.,** and **2s. 9d.,** by G. WHELPTON & SON, 3, Crane Court, Fleet Street, London, and all Medicine Vendors at home and abroad. Sent free by Post in the United Kingdom for 8, 14, or 33 stamps.

8094]

NOTICE TO INVALIDS.

Men and women in search of Health, Strength, and Energy, should know that **HARNESS' ELECTROPATHIC BELT** will strengthen every nerve and muscle of the body. It is also unquestionably the best known Cure for **Rheumatic and Nervous Affections, Liver and Kidney Diseases, Ladies' Ailments,** &c.



HARNESS' ELECTROPATHIC BELT

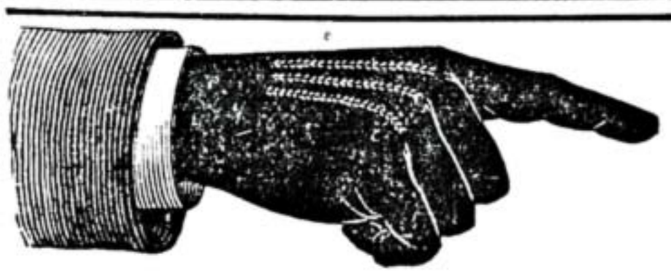
Assists the Digestion, promotes the Circulation, stimulates the organic action, and imparts *NEW LIFE and VIGOUR* to the Debilitated Constitution.

Guaranteed Genuine.

BOOK of TESTIMONIALS, Descriptive Pamphlet, and Advice, free of charge on application to

The MEDICAL BATTERY CO., LTD., 52, Oxford St., London, W.

Our readers are invited to call and personally inspect the Belts before purchasing. NOTE ONLY ADDRESS AS ABOVE. *(Corner of Rathbone Place.)*



STANDARD QUALITY.

ENGINEER'S TOOLS

AS SUPPLIED TO THE BRITISH GOVERNMENT.

It is good policy to buy such tools; they cost but little more than the common quality. Call and inspect large stock at

BRITANNIA Co.,

100, HOUNDSDITCH, LONDON.

ALL LETTERS TO BRITANNIA CO., COLCHESTER, ENGLAND.

CHARLES CHURCHILL & CO.,

21, CROSS STREET, FINSBURY, LONDON, E.C.

For 25 Years Importers and Introducers of

American Machinery and Tools.

CHUCKS, DRILLS, VICES, RULES, GAUGES, CALLIPERS, MICROMETERS, FOOT LATHES, CIRCULAR SAWS, FORMERS, FRET SAWS,

PLANES, HAND SAWS, BRACES, BITS, BORING MACHINES, and A GREAT VARIETY OF IRON AND WOOD-WORKING TOOLS.

NEW CATALOGUE, 160 Pages, quarto, over 600 Illustrations, sent for 1s., stamps.

SCOTT'S EMULSION OF PURE COD LIVER OIL

WITH HYPOPHOSPHITES OF LIME AND SODA

Is three times as efficacious as the plain oil. It is almost as palatable as milk. It does not nauseate or produce a loathing for food like the plain oil. The Hypophosphites and Oil are so skilfully combined that they are much more potent in building up flesh and strength than if taken separately, and it is to-day the best remedial agent for the cure of

CONSUMPTION, CHRONIC COUGHS, BRONCHITIS, ANÆMIA, WASTING DISEASES of CHILDREN, and GENERAL DEBILITY that exists.

Physicians universally prescribe it in preference to the plain oil, having seen its remarkable curative effects.

Scott's Emulsion of Cod Liver Oil can be bought of any Chemist at **2s. 6d.** and **4s. 6d.** A Free Sample 4-oz. Bottle will be sent to any one who will write for it if they will pay carriage on receipt.

Address:—SCOTT and BOWNE, LIMITED, 47, Farringdon Street, LONDON, E.C.

ASPINALL'S ENAMEL.

COLOURS—EXQUISITE. SURFACE—LIKE PORCELAIN.

Testimonials from the Queen of Sweden, the Marchioness of Salisbury, &c.

FOR ALL SURFACES OF WICKER, WOOD, METAL, GLASS, EARTHENWARE, CHINA, &c.

"Simply Perfection."—*The Queen.*

Made in over 100 Colours. Sold in Tins, 4½d., 1s. 3d., and 2s. 6d. For Baths (to resist Hot Water), 1s. 6d. and 3s. Post free, 7d., 1s. 6d., 3s.; 1s. 9d. and 3s. 6d.

READY FOR USE. A CHILD CAN APPLY IT.

SOLD EVERYWHERE.

ASPINALL'S ENAMEL WORKS, LONDON, S.E.

Telegrams—EDWARD ASPINALL, LONDON.

COLOUR CARDS FREE.

PRINTED AND PUBLISHED BY CASSELL & COMPANY, LIMITED, LA BELLE SAUVAGE, LONDON, E.C.

The Work Magazine Reprint Project - 2012 toolsforworkingwood.com